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THE LAW OF GREAT NUMBERS AND THE PRINCIPLES OF PROBABILITY*

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I

Statistics is a science making mass phenomena as its object. In Germany, until recent times, it was asserted that mass observation was its major object of inquiring into the natures of different phenomena in human society, e. g., in population, economy or culture.

Accordingly, it has been said that in the case of the natural sciences, e. g., meteorology, statistics merely fulfils the rôle of a purely supplementary measure, however, in the sphere of economics or demography, as the various facts and their relations could be made explicit mainly through statistics, it has had to be taken as a science.

The reason why Prof. G. v. Mayr gave the title to his book "Statistics and Sociology,"[1] is because he thought this point should be emphasized.

But during the past thirty years or so after his death (died 1925), statistics has made a remarkable progress in its analytical methods, especially in the last decade, and it can not be denied that the statistical methods have made great strides both in England and America.

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* I wrote this essay with the intention of making the students, attending my lecture, understand the applications and the limits of the law of great numbers, and I had no intention of helping scholars specializing in statistics. The theory of probability is naturally a principle in mathematics, closely connected with the law of great numbers, and statistics of today rests on the theory of probability.

I intended, therefore, to make the students understand the meaning of the theory of probability, which is an indispensable instrument for the students of social sciences, for example, economics, sociology and the like, but I did not intend to clarify how to deal mathematically with the theory of probability. Therefore, probability proper was intentionally shunned here, and left to the appropriate reference books in mathematics.

[1] G. v. Mayr, *Statistik und Gesellschaftslehre*, Tübingen 1914.

The fact that the year the book written by R. A. Fisher,[2] happened to be published in the same year as that in which Prof. Mayr died, seems to suggest something significant.

Fisher's "Statistical Methods" was a product arising from actual necessities in his studies at the Rothamsted Biology Research Instutite, hence, at first, his statistical methods might not have been intended to have social science as its direct object, but soon after, these methods began to be used in inquiring into social phenomena; it was seen that research by using his methods could get much better results compared with those used in the past. By, such as the theory of the sampling method, significance test as well as degree of freedom, furthermore, correlation, discovered by Galton and Pearson, regression coefficient, etc., statistics seems to have been entirely renewed. Briefly, it may not be too much to say that they are the causes of the revolutional changes brought about in statistics.

Soon after the World War II, in Japan, Mr Deming, an American, made several visits to our country and introduced these theories and their applications in the field of statistics. Since then, the number of scholars intending to study statistics has remarkably increased in a short period, so that it is needless to say that such a popularity of the study of statistics, due to its progress in Japan, is unprecedented.

Accordingly, it is natural that there is a tendency in studying statistics, to consider it as a method or a methodology which has been in prevalence in England and America. Statistical methods, as shown above, have enabled us to analyse social phenomena more explicitly than before.

Recently, by such as quality control, market research, public opinion and different kinds of index numbers, statistics is no longer allowed to remain behind the cloistered world of abstract science, but in being used in industrial management, etc.; statistics may be looked upon as an indispensable instrument in our practical life. Formerly, it was thought that business risk was considerably great, but recently by making use of statistical methods, it may be said that the major parts of management are being carried out upon a comparatively solid basis. Thus, it can be seen that statistics has now become an indispensable means to a reasonable method for research work. Comparing this with statistics of former times, we cannot neglect the fact that statistics was considered as a material science, in other words, not as a formal science, and we dare say that this fact is a great change that has been wrought in statistics. If we allow for the fact that the late Mr Gosset[3] who anonymously supported R. A. Fisher's ideas,[4] we can not help being surprised at finding how the principal features of statistics have so far been varied.[5] In the case of natural phenomena as well as social phenomena, it is impossible to determine the general nature (*Parameter*) of the facts at issue from an individual case; thereupon, we may collect comparatively many facts (*Samples*) which can be assumed belonging to the same category, and may seek for what nature they have in common, i.e., a typical one from the grouped phenomena.

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[2] R. A. Fisher, *Statistical Methods for Research Workers*, 1. ed., 1925; 11. ed., 1950.

[3] W. S. Gosset, or "Student".

[4] R. A. Fisher, *ibid.*

Formerly, it was believed possible in natural science, e.g., through chemical experiments, to separate "water" of say one liter, and to ascertain its conditions and their interrelationships, but it was impossible to make such experiments in social science, because in studying social facts, being mass phenomena, it was only possible to make them clear by means of mass observation.[6]

But, nowadays, the research workers in physics, astronomy, biology, agriculture, medicine, etc., do not always content themselves with analysing only a few pieces of samples, but they have become accustomed to regard it as an ordinary research process to find out 'average' of the results collected by many observations. Darwin's evolutionism as well as Malthus's theory of population, may be considered as the analytical results of samples. As can be seen above, we may point it out, from the facts of progress in statistics, and of the abundance of statistical data, that the methods of modern science have undergone a change from deductive to inductive.

II

The facts above referred to, naturally relate to the fundamental principles of statistics or "Das Gesetz der grossen Zahlen." The nature of this law is to expose regularity, " 'Characteristic of population,' or 'Parameter'," which comes out clearly only in the case of great numbers derivable from the overall results of mass observation, i.e., it is to expose the regularilty of the relationships between their combinations in the static mass, and the regularity with which some events ought to occur, in the dynamic mass.

But in the case of the observation of small numbers drawn at random—mass observation consists of the results of these small numbers—the existence of such a regularity may not be recognized. Because statistics aims not at something individual but at something representative, i.e., "*Das Typishe,*" and this goal can be fulfilled only by the observation of great numbers. Therefore, the more we increase the chances of observations, the more the deviations from the general average or the representative value decrease, in other words, the nearer can we approach its true phase.

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[5] Mr. Gosset published his studies on sampling in the essay "*Probable Error of a Mean*" under his pseudonym (non de plume), "student." in 1908. Since then he continued his studies, and arrived at the correct solutions of the problems regarding distribution, besides 'Variance' i.e., the distribution of estimated value, the distribution of the average divided by the estimated standard deviation and the distribution of the estimated coefficient of the correlation between independent variables. With this essay, he broadly established the standpoint of the "χ^2" and "t" distributions in the theory of sampling. The development of the "z" distribution was a later result based upon these two. But in those days Gosset's propositions were by no means easily accepted generally, but after Fisher resolved them into simple arithmetic formulas through his incessant efforts, it may be said that it has become the common possession of mankind.

[6] Tyszka, *Statistik*, 1924. S. 27.

Quetelet has explained the principle of the law of great numbers by a skillful example. Now, let us draw a distinct circle with a piece of chalk upon a large board, approach and watch it, then you will not fail to notice even a small spot. In other words, you may be able to distinguish every point which is different from one another somewhat incidentally or voluntarily, as great numbers. But the farther you step back from the board, the larger the points in numbers may be observed, and at the same time, you would be able to see that these points are divided into a certain length on the board upon which the circle is drawn, and if you step back farther, you are apt to overlook and have difficulty in recognizing the different combinations, and at last you may notice the general tendency which rules the variances of many points, i.e., the nature of a dotted line.

We may see that human community is almost identical to this. Though the human individual is allowed to be free within a certain limit, if we look at those voluntary acts from some distant place, we can hardly grasp them. Then we may easily recognize that only a general law is beginning to work.[7]

The law of great numbers was explained in another way by the Danish statistician, Westergaard, and the French mathematician, Laplace.

Assuming red and black balls have been previously put in a jar in the same number respectively, and every one of these balls in equal in size and shape, and is independent of each other. Moreover, they are by no means possible to be distinguished from one another even with the sense of touch. Suppose with your eyes shut, you take out a ball at random and see whether it is red or black, and again shut your eyes, place it into the jar, and after shuffling the jar many times, repeat the same process as many times. If this process is often repeated, then the probability that each of these balls is drawn, must equally be $\frac{1}{2}$ mathematically, because the same numbers of red and black balls were previously put in the jar.

Now, if such experiments are repeated 'S' times and if the red ball is drawn 'M' times and the black 'N' times, then $\frac{M}{S}$ or $\frac{N}{S}$ may tend to approach $\frac{1}{2}$ which is the mathematical probability (*a priori probability*), by increasing the number of 'S'. Such trials have been practised by students in many countries. The results, Westergaard obtained from his experiments, are as follows:

In the case of ten thousands drawings, the red balls drawn were 5,011 and the black 4,989, so that the frequency of drawing red and black balls is approximately the same in percentage.

Moreover, Westergaard divided the ten thousands trials into one hundred rows, which contained one hundred trials respectively, and he tested every of them in the frequency distributions. Then he obtained results that showed the lowest rate of red balls appearing was 34 and the highest rate was 63. Therefore, the rate was approximately 1 to 2. On the other hand, in the case of a row of five hundreds drawings the highest rate was 273 to 227, and in the case of a row of two thousands drawings, the highest rate was 1,041 to 959.

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[7] Kaufmann, *Theorie und Methoden der Statistik*, 1913. S. 30; Tyszka, *a.a.O.*, S. 28.

In presenting these as the rate of deviation, in the case of a row with 100 drawings, the extreme one was red balls, 34, and black, 66, and the absolute deviation to the average 50 being 16, its rate was 32%. On the contrary, in the case of a row with 2,000 drawings, the absolute deviation to the average 1,000 being 40, its rate was only 4%. Moreover, in the case of a row with 10,000 drawings, the abosolute deviation to the average 5,000 being 11, its rate was only 0.22%.

Thus, Mr Westargaard established a law similar to that formulated by Quetelet. In other words, it follows naturally that, in order to halve the divergence of uncertainty, the frequency of observation should be squared.[8] Quetelet, a Belgian, also made a trial like this, and Buffon, a French, counted the heads and tails of a coin tossed. By such a trial, he found that, out of 4,040 tossings, the heads appeared 2,048 and the tails 1,992, i.e., the frequency of the heads and tails appearing was 51% and 49% respectively.

Süssmilch asserted long before that, for the sake of determining the social

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[8] Now, supposing the heights of 1,000 students, as a sample, are between 174.711cm and 175.959cm, the uncertainty is the difference of these two figures, i.e., 1.248cm. In order to halve the uncertainty, 4,000 students in place of 2,000 should be studied. Again, if we want to make the uncertainty reduce to 0.5cm i.e., we want to obtain the precision of $\frac{1.248}{0.5}$ or that of 2.50, we must study 2.50^2 or 6.25 times as many cases, i.e., 6,250 students. Therefore, the more the number of samples is increased, the more their confidence limits tend to decrease. And the confidence limits are inversely proportionable to the square root of 'N' in mathematics. Then we get the following:

$$\sigma_{\bar{x}}=\frac{\sigma_x}{\sqrt{N-1}}$$

This is the formula for the standard error of the mean. $\sigma_{\bar{x}}$ means the standard error of the arithmetic mean. σ_x means the standard deviation in population. $\sqrt{N-1}$ means the aggregate of the samples accounting for the degree of freedom. But if the statistical units in a sample are great enough, the difference between 'N—1' and 'N' may actually be neglected.

Thus, when the standard deviation is 6.58cm and the munber of samples is 1,000, then by using the correct formula, we get:

$$\sigma_{\bar{x}}=\frac{\sigma_x}{\sqrt{N-1}}=\frac{6.58}{\sqrt{999}}=0.208\text{ cm}$$

In the case of normal distribution, the areas enclosed by the base-line under the curve, show the following relations: The area enclosed between the mean and ±1 standard deviation is 0.6827. The area enclosed between the mean and ±2 standard deviations is 0.9545. The area enclosed between the mean and ±3 setandard deviations is 0.9973.

Thus, the area enclosed between ±1 standard deviation is approximately two-thirds of the total area, and the area between ±2 standard deviations is about 95 percent of the total area, and the area between ±3 standard deviations occupies almost all of the area. Thus, when the distribution of sample means shows the normal distribution, and the mean of sample means, '*statistics*' coincides with the accurate mean of population, '*Parameter*,' the following relations will be found from the nature of normal distribution, i.e., the chance in which the error of statistic is greater than one standard deviation from parameter, i.e., one standard error, occurs once in three, and the chance in which the error of statistic is greater than two standard deviations from parameter, i.e., two standard errors occurs once in twenty, and the chance in which the error of statistic is greater than three standard errors scarcely occurs. In other words, the highest limits of error may be said to be three standard errors.

law, great numbers should be observed, and he said as follows:

"In a small circle, everything appears to exist without any order. In order to show up the hidden law, one should observe as many cases as possible extended to the whole circle.[9] Süssmilch believed that, not only the greater the mass, but also the longer the time, the clearer the constant cause tends to become apparent, and thus, a certain law or constancy in social phenomena clearly emerges. And, Süssmilch recognized the existence of such a law, and attributed it to the order of God, so that we may conclude that he related the law of great numbers to his faith. From the point of view of our physical life, there are outstanding divergences arising from the various causes, in the number of the births of males and females among families. But, based upon mass observation, the divergences of the birth-ratio between the sexes tend naturally to become diminished. If the mumber of observations, and the period of investigation are great enough, the birth-ratio between the sexes tends almost to be constant. For example, in Japan, the birth-ratio between the sexes ranges from 102 or 103 of male births to 100 of female births, and thus we may say that the birth-ratio of males always exceeds that of females. Moreover, such a ratio may come out not merely in Japan but also in any part of Europe, and thus, we can recognize that it is a general feature. But as the death-rate of the male in his childhood is generally high, compared with that of the female, the ratio between the sexes is approximately able to maintain its balance.

In the case of death, there is also a certain regularity or constancy. And there is a certain number of deaths in each age, the deviation from that number each year is considerably small; in addition, these relations will continue to exist for a long time to come, a decade or a century.

Thus, we may mathematically be able to calculate the death order of life, the average length of life, average duration of life, etc.

Unless we rest on the facts referred to above, we can not recognize our constant order of death, which, in practice, has a very important meaning in life insurance. We have so far seen constancy in our physical world, but there is also constancy in our voluntary activities and they are similar to each other. These points were already referred to clearly in Wagner's well-known work, "The law in the Apparently Voluntary Human Activities",[10] which is worth reading even today.

There are also certain rules in marriage, divorce, suicide, crime and the like. In marriage, the will and the wish of each person may be of a quite different sort, but nevertheless, the total number of marriages in any country differes hardly from year to year. In divorce, it is similar to them in marriage. If, by any chance there is a variation, it will be very gradual, it rarely changes by incident, or suddenly. It is also the same with suicide, i.e., the number of cases of suicide amongst the sexes maintain an approximately constant ratio in any year, and its fluctuation is very small. The more enlightened the people become, the more the cases of suicides tend to increase, but the tendency is gradual, and the trend is slow and regular, not in an extraordinary or unexpectable way.

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[9] J. P. Süssmilch, *Von der Göttliche Ordnung*, S. 64; Tyszka, *a. a. O.*, S. 28.

[10] Adolf Wagner, *Die Gesetzmässigkeit in den scheinbar wilkürlichen menschlichen Handlungen vom Standpunkte der Statistik*, 1864.

It is so with crimes and illegal acts; in other words, there are like numbers repeated in the number of plaintiffs and defendants, in law suits, and their judgment ratio are repeated in a similar way.

Quetelet is quite right even today when he said, "there can not be two budgets, so we must pay regularly for equipment every year, such as prisons, guillotines and galleys."

There is nothing different from that in economic life too. Here we may find regularity and constancy everywhere in our economic life. Though there are in fact certain changes in the production and the consumption of goods, these changes are extremely gradual as well as permanent. With the public budget and the cost of living, the revenues and payments for this year rest mainly upon those of the past, and these processes are to be repeated. Thus, both in social and in economic life, we may see everywhere a certain regularity and constancy.

Needless to say, in these cases, it must be submitted that the number of observations is great enough.

Bortkiewicz asserted a parallel law or law of small numbers, in contrast to the law of great numbers. Thus, constancy or stability will arise from its own nature in a small series, as well as in great numbers. Child suicides or accidents with casualities will show relevant examples. He firmly asserted that in these cases, their real regularities will approach the mathematical probability, and his assertion may be said to fit the reality.

But the so-called law of small numbers is nothing but a specific case of the law of great numbers. Because in this case, the fact that real regularities will approach the mathematical probabilities, can only be certified when small series connect with great numbers. In other words, when investigation is carried out upon a large area, constancy and similarity will occur even in small numbers.

The so-called 'similarity in the world' has an important significance from the practical view-point as well as from the scientific view-point, and therefore, it refers naturally to the principles of probability.

III

It is the problem of probability, "*Wahrscheinlichkeit,*" which is closely related to the law of great numbers. The problem of probability above refereed to is nothing but the theory of probability in mathematics. On this point, Laplace, a Frenchman said, in his treatise[11] that when the number of observations of so-called 'chance'—the cause why chance happens of which we are out of the reach of exploration—is increased, a remarkable regularity might tend to occur. Laplace said in a passage of his essay as follows:

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[11] Laplace, *Essai philosophique sur la probabilité,* 1814.

"Almost all of events which seem to be strange to the natural law, constitute a series of natural or necessary phenomena, just as the sun constitutes the center of the universe. As we have no knowlege about the relationship of the whole world, we might rather attribute the same events to fitness, 'Zweckmässigkeit' or chance. But there are no "chances" at all in the world. To attribute them to chance is nothing but to explain that we are ignorant. World phenomena are ruled not by the outside intervention of a spirit but by the sole law of causation."

This fact that phenomena are of regular frequency—we call them "chance" because it is impossible to know the causes—makes for us mathematical dealings possible, in our actual life. It is the so-called theory of probability which we want to apply.

Thus, the theory of probability is one of the principles in mathematics, and is the most excellent method as an instrument for verification within the scope in which we can deal, by ourselves, with those problems to solve, as we have no complete knowlege.

Thus, the mathematical probability stands against hypothetical judgment or logical necessity. With the latter, when 'a' exists, there must be the existence of 'b'. For example, supposing there is a triangle, the total of three inside corners must be equal to two right angles.

But with probability, disjunctive judgments are accompanied, i.e., if there is 'a', there must be any of 'b', 'c', 'd', 'e' or 'n'. For example, in the case of casting a die, any one of the spots, 1, 2, 3, 4, 5 or 6 will appear. In the case of birth, there is either a still-birth or normal-birth, of either male or female. The necessity of such a case is connected with not only the occurrence of one event, but also the occurrence of any of these events. Moreover, one of these events must occur, therefore, the task of calculating probability is to ascertain the precision of the frequency of probability. Basing ourselves upon experiencial facts, lacking comprehensive causes, (*Parameter*), the statistical averge is as in the case of *a priori* probability, sought to draw out a certain rule or regularity from a phenomenon.

The so-called 'similarity in the world' rests on a statistical average based upon the theory of probability. But a statistical average differs to a certain extent from what is calculated only by the mathematical method. In other words, the theory of probability in mathematics deals with almost all of the factors in the world.

With the statistical average, as there are some limits, it can not generally deal with all of them, from the statistical view-point; this is called 'statistic' of sample deviation.

As a result, not only in physical or natural phenomena, but also in social phenomena, departing from the theory of probability, it may sometimes occur that the males' birth exceeds the femalers' or vice versa.

But, generally it may not be denied that statistical averages play an important rôle in social or economic life. For example, in our economic life of today, the business man relies generally on the results obtained from the statistical data of production, and acts with his expectation that there will neither be a social fluctuation nor will there be a very little shift, if any, in the forthcoming years.

If we can not have such an expectation in our social or economic life, such activities will come to a standstill and would be disturbed. Here we can see that the theory of probability is closely connected with statistics.

IV

Regarding the fact that there is a rule or constancy in natural as well as social phenomena, it has not so far been dealt with in England, although this fact was a big problem for a long time in the Continent, especially in Germany. Thus, the author of 'Göttliche Ordnung,' Süssmilch said that all phenomena in the Universe are ruled by the God's order, which He predeterminedly revealed, so that not only the balance of the sexes are maintained, but also population, which is gradually increasing from year to year, and the food required to maintain the population could be balanced.

Altxander von Öttingen made a trial to solve this problem in his "Die Moralstatistik" from the view-point of his teleology and religion in part.

On the contrary, Quetelet and his disciples intended to solve this problem from the view-point of natural science. In other words, they thought that the law prevailing in social phenomena was the natural result accruing from the law of nature. Thereupon, they concluded that self-determination was merely superficial and the truth lay in our predetermined destiny. This fact seemed to be justified not only in the process of physical life, such as birth and death, but also in almost all of the activities which were believed to be the result of our free or voluntary judgments.

Prof. Adolf Wagner, at the Berlin University, who was well known as a modern economist, also denied the idea of 'Free Will' in his essay above referred to. To quate a passage: "But then, it is noteworthy that, though we work as the faithful members of a great mechanism, we have yet a restricted free movement, without preventing such a mechanism from moving, moreover, we believe that we are doing perfectly self-determined activities beyond such a limit. But generally from the viewpoint of mass, our activites are ruled by rigid and general causes and occur just in the same way as the physical world-order moves."

Now, if there exists really any paradox between these two, can statistical law deny the existence of 'Free Will'? Naturally, there is no paradox between them, and if we observe them in detail, this problem is quite easy to be solved, so that we need not seek a way to supernatural religion, or metaphysical reason or fatalism because at first the statistical average has no relation to 'Free Will,' and secondly, 'Free Will' is a problem of ethics and we have 'Free Will' from the view-point of morality. To illustrate in detail, we act according to our own judgments and opinions, and such an act is called 'Free Will' from the ethical point of view.

Man's free acts arise from the commands of his own reason, thereupon man is inclined to behave with higher and nobler motives.

On the contrary, an act ruled by the animal wants is called "Unfrei." There is always a motive in any of our activities, but in almost all cases, the motive is not simple, but is so remarkably complicated, that it is quite useless to try to find out the cause of each activity.

Therefore, in examining statistical regularity, we should make it our object to observe the whole or mass phenomena instead of individual acts. Only through such a method of observation, can we successfully exclude any and all individual activities, arising from chance, and we can get the general rule coming out of the constant causes which are free from the peculiarities due to space and time. Then our 'Free Will' is kept balanced, but never annulled.

Prof. Schmoller explained this as follows: "To-be-free, means that we ardently push to the front to be a man of ethical being. If it is true, the superior free means not voluntariness but the norm. The norm is said to be the absolute good and ideal, then we will call the act with the strongest motive, *the most free.*"

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THE AMERICAN DISTRIBUTION AND INFLATION PROBLEMS

By M. BRONFENBRENNER

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"In any contest between lunatics and paralytics, the lunatics always win." F. L. Schuman.

I. *Redistributionism in America*

Americans are supposed to have little or no direct interest in problems of income distribution or redistribution as such. In the mid-thirties Senator Huey Long organized a proto-Fascist movement around the slogans of "Share the Wealth" and "Every Man a King," but only in the poorest section of the country in the middle of the Great Depression. The same slogans would do nothing even for Huey Long today; the man in the street cares nothing about them. He cares even less about such statistical niceties as the "labor share of the national income," the "coefficient of concentration," or the alleged "income revolution"[1] which has accompanied the so-called "people's capitalism." Ideas of income distribution and redistribution are not ideas to man the barricades—not in America, with the highest living standards in the world, and with unemployed living better than fulltime workers in most other countries.

All this is true, and yet—Every worker almost without exception wants to live closer to his boss' level. He will not be satisfied until he does live closer to his boss' level. He does not care how much better he lives than foreign workers whom he has never seen. Unless the proportion of workers to bosses falls rapidly —as it shows no signs of doing—the satisfaction of this desire requires more income redistribution than is apparent at first glance.

Some elementary arithmetic can illustrate this point. Suppose society to be made up of 60 million "workers" (including farmers) whose income is derived predominantly from labor, and 10 million "capitalists" whose income is derived predominantly from property. Suppose average annual labor income to be $5,000 and average annual property income $ 10,000. We then have in the aggregate:

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[1] The present writer is among those who would discount this "income revolution"—a sharply decreased relative share of the top few per cent of income receivers—as a statistical mirage. It results from a number of extraneous factors, of which five are probably most important: Corporate shifts away from dividend payments (which enter personal income) to direct internal financing (which does not), rising corporate income taxes, greater employment of married women, decreasing family size among the poor, and government price supports to farmers. For a fuller account, see R. J. Lampman, *American Economic Review*, June 1954.

Total	Labor	Income :	$ 300 billion
〃	Property	〃 :	$ 100 〃
〃	Personal	〃 :	$ 400 billion
Labor Share:			75 per cent

(These figures are not far removed from the actual state of things in the United States.)

Now suppose the average worker to demand successfully, not the abstraction of "income redistribution" but the channelling of the benefits of growth into labor hands, whether by collective bargaining or direct legislation makes no difference. Suppose that as a result average labor income rises from one-half to two-thirds of average property income. Then, keeping the proportions between the two classes unchanged for present purposes, we might have in some future year 75 million workers at an average income of $8,000 and 12.5 million capitalists at an average income of $12,000. The basic aggregates would then be:

Total	Labor	Income :	$ 600 billion
〃	Property	〃 :	$ 150 〃
〃	Personal	〃 :	$ 750 billion
Labor Share:			80 per cent

Some such "biased economic growth" as this appears to embody the desires of workers and their leaders considerably more than any confiscation of capital or dispossession of capitalists here and now. It is advocated from time to time by liberal economists as a palliative for group and class conflict. It is however opposed bitterly by capitalists as subversive of the profit system—almost as bitterly, it sometimes appears, as confiscation itself. The underlying explanation of both worker and capitalist attitudes seems to be that in a materialist society social status requires income and wealth as a necessary condition. (Our critics suggest that income and wealth may be a sufficient condition as well.) The status and therefore the self-esteem of the worker requires some closing of the gap that separates his income and wealth from that of his boss. The status and therefore the self-esteem of the boss requires that he maintain or even widen it.

We are basing our discussion of distribution entirely on the functional distribution between labor and property income, although most equalitarian concern is with the personal distribution of income by size. This is done because the functional distribution is easier to handle and also because, so long as total real income does not decline, any increase in the laobr share is associated with a decrease in the inequality of the personal income distribution, and vice versa. At the same time we ignore quite intentionally that aspect of the currently fashionable doctrine of "people's capitalism"[2] which suggests that a worker may become a capitalist by the purchase of shares of stock which yield an income of perhaps five per cent of his wages.

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[2] This current doctrine represents little more than the resurrection of the views of Thomas Nixon Carver of Harvard University during the stock-market boom of the 1920's—usually without credit to Professor Carver. Carver, *The Present Economic Revolution in the United States* (Boston: Little Brown, 1925). For a criticism of the current revival of "Carverism," see Victor Perlo, *American Economic Review*, June 1958.

II. *Digression on Welfare Economics*

It will sharpen the argument to compare the preferences of our representative American voter with these of the classless "economic man" assumed in conventional welfare economics. This appears to involve a certain amount of diagrammatic analysis (Figures I and II).

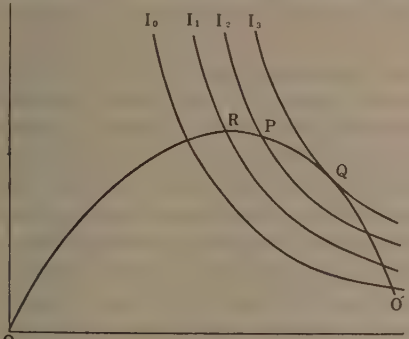

Fig. I

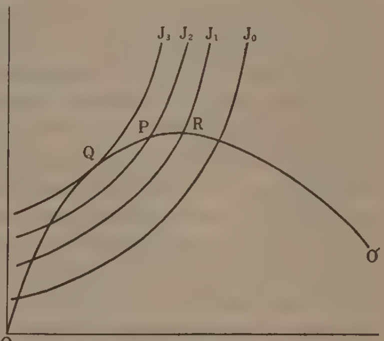

Fig. II

On these diagrams the horizontal axis represents the ratio of average labor income to average property income. It may be taken as an index of income equality under capitalistic conditions. The further one goes to the right, or East, the more equal is the distribution. The vertical axis represents the average real income of society as a whole.

On Figure I, which may be thought of as representing a capitalist viewpoint, a conventionally-shaped family of "community indifference curves", I_0, ..., I_3 connects points between which the representative voter is indifferent. Any point on I_3 is however preferred to any point on I_2, and so on. The shape of the curves implies that, especially at high income levels, the voter will accept a considerable cut in real income in the interests of greater equality. On the same diagram, the line 00′, with its maximum at R, gives the range of possibilities open to the society in question. When relative labor income is too low (to the left, or West, of R) average income is held back by a lack of purchasing power. When relative labor income is too high (to the right, or East, of R) average income is depressed by inadequate inducement to invest and thus by inadequate capital supply.

Certain elements of unorthodoxy have already been smuggled into this diagram; the reader should be warned before risking further contamination. The use of community indifference curves is not strictly justifiable unless all the individuals of the community have identical tastes and preferences. It is by no means an established proposition, particularly among capitalists, that income can be held back by a lack of purchasing power. Most important, conventional welfare economics, which is intent on maximum output under the most efficient allocation of resources and is relatively unconcerned with problems of distribution, would draw the indifference curves I_0, ..., I_3 as horizontal lines, one above the other.

Suppose for the moment that our present position is P on Figure I. This lies on indifference curve I_2 ,to the right of R, expressing a common capitalist view that America is already sacrificing output to equalitarianism. We inquire: in which direction should be move along the line 00′ in the interest of economic welfare? The orthodox answer of the orthodox welfare economist would be—to the Northwest, toward R, toward optimum allocation of resources and maximum real income. But this involves a sacrifice of income equality, probably in the interest of capital formation. It involves more sacrifice, in fact, than the voters are willing to accept, as may be seen from the position of point R on indifference curve I_1, below I_2. The politically expedient move from P along 00′ would be the Southeast, toward Q which lies on the highest attainable indifference curve I_3. True, this means lower output—presumably subsidizing resources which are held idle or in the "wrong" uses, or discouraging capital formation, or something of the sort. But on the other hand it increases equality[3] without too great a burden on living standards—which seems to be what people want.

This picture of mass public opinion blocking economic wisdom by its voting power is anathema to spokesmen for organized labor and agriculture, to the New Deal wing of the Democratic Party, and to other elements further Left. Thier own view can be represented by Figure II, with the same axes as Figure I. The major difference is that on Figure II it is the capitalists' preference for monopoly profits, expressed in their indifference curves J_0, ..., J_3 which are holding production below the level R, blocking redistribution which would raise it there, and attempting to force movement to the Southwest along 00′ toward the point Q.

It is an unfortunate commentary on the under-developed state of economic science that we cannot yet say which of these figures is in fact the more realistic—whether production would be increased by more or by less inequality in income distribution—and must rely almost exclusively on our prejudices.

On each of the two diagrams there is drawn a lowest indifference curve, I_0 on Figure I, J_0 on Figure II; these have not entered the discussion thus far. They represent tolerance limits. Only for points to the Northeast of I_0 will labor tolerate the capitalist system; points to the Southwest mean social instability and possible Socialist revolution. Only for points to the Northwest of J_0 will capital tolerate liberal capitalism or political democracy; points to the Southeast mean social instability and possible Fascist movements of some sort. The apparent economic success of Socialist alternatives to capitalism, such as the Russian and Chinese systems in the perspective of 1957–58, tends to shift I_0 to the Northeast and J_0 to the Southeast. The apparent economic success of Fascist alternatives to capitalism, such as the German and Italian systems in the perspective of 1937–38, tends to shift I_0 the Southwest and J_0 to the Northwest.

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[3] It may also increase economic security—not so much in the aggregative sense of avoiding depression and mass unemployment as in the immediate and personal sense of insuring each individual an income reasonably close to the average for the community without requiring drastic changes of location or occupation in return. The effect of "unsound" economic policies on personal economic security may have more to do with their appeal than does their effect upon equality as we are measuring it.

III. *Notes on "American Exceptionalism"*

Much of the foregoing suggests that something akin to subterranean class struggle is going on the America, with income distribution as the unconscious locus of contention. This suggestion some American economists, perhaps the majority, would dispute with vigor, but let us press on regardless to the logical next question. Why has this class struggle in America, if it exists at all, been so attenuated in the past? Is it likely to remain equally attenuated in the future?

This question is by no means novel, and has in fact been discussed for generations in American labor, liberal, and Socialist circles. In the last-named circles a special heresy known as "American exceptionalism" has been identified, labelled, and (to the satisfaction of some critics) refuted. Its basic doctrine is precisely that the class struggle will not become acute in America in the foreseeable future.

Avoiding any direct stand for or against this heresy of American exceptionalism, we may list several explanations for the comparative attenuation of the American class struggle, and under each head consider its prospects for future relevance.

1. First and foremost is the famous American absolute standard of living, which apologists for "the American way of life" never tire of lauding, and to which we have already alluded sufficiently. How effective this will remain in pacifying the American workingman in future years will depend primarily (as we have implied in Figure I) upon the comparative rapidity of the growth of consumption standards in America on the one hand and the non-capitalist countries, particularly Russia and China, on the other. Lenin once said that the road to London and Paris led through Peking and Calcutta. Perhaps it does, but the road to New York and Chicago also leads through more and better workers' housing in Moscow and Leningrad.

2. Second in importance is certainly the American tradition of social mobility, highest of any major capitalist country. A substantial minority if not an absolute majority of American manual workers, native-born white Protestant workers in particular, have always felt and still feel the road to success, involving a rise out of their class, to be open to them or to their children. In the 19th century the road to success lay through independent entrepreneurship, sometimes involving competition with one's erstwhile employer but more often involving a move toward one or another frontier area. Until approximately the

turn of the century, as Sumner Slichter has argued in *The American Economy*,[4] the number of independent proprietors (mainly farmers) did in fact exceed the number of wage and salary earners in the American labor force. This made the belief plausible (although doubtless false) that a really substantial fraction of the labor rank and file, once entering manual labor status or born into a manual worker's family, could actually rise to independent and stable entrepreneurship. On the other hand a large fraction of what would in Europe or Asia have been the leadership group in the laboring class was in fact able to rise in this way. When Eugene Debs, the early American Socialist leader, announced his ambition to rise "not out of his class, but with it," this was regarded as something strange and wonderful; it would be commonplace today.

Professor Slichter himself, although at the antithesis of Marxism, feels this particular element of social mobility to have lost its force and speaks of the economy as having entered with the New Deal a laboristic period, in which employees become the most important single political-economic pressure group and dominate the economic policy decisions of the Government. The majority of labor economists, considering this position somewhat exaggerated, point to a new form of social mobility which has arisen in place of the old one. Centering in the public school and university system, particularly the public colleges of business, engineering, and law, it has opened the path to the upper reaches of corporate bureaucracy to a small number of workers' children. Upward mobility out of the manual laboring class, in other words, still exists but has changed its form. Where it once led through competition with one's employers, it now leads through to joining them as a junior executive, a management interne, or a college-trained technician of some variety or other. Here again it is dubious how large a part of the labor rank and file, once entering manual labor status or born into a manual worker's family, can expect to rise even to junior executive status or its equivalent. On the other hand a large fraction of what would in Europe or Asia be the most expert and adept technicians of the labor movement does in fact manage to rise in this manner.

Certain significant sociological differences between the nineteenth-century upward mobility by independent competitive entrepreneurship and the twentieth-century upward mobility by permission and affiliation should not pass unnoticed. There is first of all a quantitative difference. Proportionately fewer workers rise through higher education to corporate officialdom than once rose through "the university of hard knocks" to independent proprietorship.

The qualitative difference is more important. One set of personal qualities are required for successful emergence as an independent competitive entrepreneur, against the will of the established firms in the field. Quite a different set are required to rise as an intellectual *valet de chambre* or yes-man by the favor and grace of those already at the top. When upward mobility is closed to the competitive, combative type, he may become a leader of revolt and a menace to the established order of things—if not a Joseph Stalin, then a John L. Lewis or a Walter Reuther. When upward mobility is closed to the complaisant corporate bureaucrat, it makes little or no difference. Such types are notoriously less influential among their equals than among their "betters." (The contempt of the manual worker for his lower-level executive contemporary is common knowledge in American industrial relations.) It follows that a change such as has occurred over the past half-century in America, concentrating upward mobility within the business system upon the sleek and polished hand-shaker while shunting the rough and rugged competitor toward labor and, the Left Wing, is a danger to the established order even though the aggregate amount of upward mobility, however measured, may not have fallen in the process.

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[4] *Op. cit.* (New York: Knopf, 1948), pp. 7–13.

A postscript to the mobility discussion, before we leave the subject. Mobility has been furthered traditionally by a tendency, denounced by Social Darwinians as dysgenic, for the upper economic classes to fall somewhat short of reproducing their numbers in each generation. The poor boy's chance for success was increased because the rich did not have enough sons, sons-in-law, and nephews to replace them. Since World War II, temporarily at least, this has ceased to be true. The suburban aristocracy raises its children by the half-dozen instead of by the pair. Unless the economy increases its growth rate in the next generation, nepotism alone may become a more serious block to upward mobility in the 'sixties and seventies than it has ever been before.

3. A third important factor retarding class conflict in American has been the cultural disunity of the American working class. To a greater extent than in any industrial country of Western Europe, and to a greater extent than in Japan, American workers have traditionally been divided into mutually suspicious and sometimes hostile camps by differences in race, color, religion, language, and national origin. This suspicion and hostility has on occasion been furthered and fomented by employers, but employer interference is hardly a sufficient explanation of its rise and significance. This working-class disunity is the less attractive side of the famous American "melting pot." But like melting pot itself, it has tended to decrease in importance since quantitive restrictions on immigration were adopted in the 1920's,[5] and since the older immigrants and their children have learned the English language. With a few important exceptions (Negroes, Mexicans, and Puerto Ricans) the position of minority groups in the United States has been improving steadily since the 1930's. Along with this improvement, the importance of racial, religious, and allied divisions in the

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[5] It is interesting to speculate on the motives which have persuaded American employers generally to support immigration restriction, against their obvious economic interests. The most important motive seems to have been the fear of foreign, particularly Socialist, ideologies. (The first large-scale restrictions were adopted in 1920, when Russian Boshevism threatened much of Central, Eastern and Southern Europe.) Also important was the psuedo-eugeniic doctrine of "Nordic Supremacy." In a less virulent form than it took in Nazi Germany, this type of racism has had many supporters among the American employing classes, themselves largely Nordic in their origins.

working class has been decreasing as well. The improvement in the status of minorities still has a long way to go as regards the three groups mentioned above, constituting some 10 per cent of the labor force. By the same token, cultural disunity within the laboring class is observed most clearly with regard to problems involving chiefly Negroes, Mexicans, and Puerto Ricans.

4. For however long massive redistribution requires the type of Socialism represented by the proletarian dictatorships of Russia and China, the whole American liberal-democratic tradition stands in the way of undue concern with class conflict or redistribution problems. For all its imperfections in practice—most particularly in the Southern States—the American constitutional system has given civilian Americans and American intellectuals a taste for civil liberties. They will give up their liberties less easily than civilian Russians and Chinese, including Russian and Chinese intellectuals, gave up vague promises of similar liberties sometime in the future.

At the same time it is impossible to deny the charge from the Socialist side, that the allegedly free competition in ideas is weighted heavily in America towards whatever views are most congenial to business interests, and therefore away from class conflict or equalitarianism. Newspapers and magazines, radio and television broadcasts, political campaigns all cost money in increasing amounts. Organs which can appeal to wealthy advertisers or sponsors have obvious advantages over those which cannot, and the case against income redistribution is stronger as a result.

This statement from a plea by a magazine somewhat left of center refers to magazine publishing, but applies equally well to any of the other media of communication mentioned in the last paragraph:

> "Magazine publishing today is geared to mass circulation of mediocre quality, financed by advertising revenue from big conservative business interests. Of those liberal publications that survive, all but [this one] depend on heavy subsidies from wealthy individuals or organization."

5. Four main roots of American exceptionalism, meaning here American unconcern with problems of class conflict and of the distribution of income, wealth, and economic power, have now been examined. They all extend deeply into the American past. Two see already declining in their importance: these are American social mobility and the cultural disunity of the American working class. The two others may be expected to decline as well, when and if Socialist States raise the living standards and improve the civil liberties of this peoples: these are the American standard of living and the American liberal-democratic tradition.

What then is left? Apparently very little. We may apparently forecast for the future increasing concern among the American masses with the redistribution of American income and wealth, meaning not statistical coefficients but the relative living standards of workers and their bosses. And since the masses, by definition, dominate American democratic political institutions, resistance to redistribution may be expected to take anti-democratic forms once mass interest in redistribution has been aroused. By anti-democratic forms we mean, to put it more bluntly, Fascism of some sort; the late unlamented Senator McCarthy may be an ancestor of greater McCarthys to come. The conflict or contradiction between political democracy and economic oligarchy, in this admittedly unoriginal view, is headed for a "Coming Struggle for Power." The antagonists will be egalitarianism of a New Deal or Socialist strain, and some sort of Fascism dedicated to preservation of the economic *status quo*.

There has however arisen since approximately 1940 a new fifth root of apparent American unconcern with class conflict. This new fifth root is not at all unique to America, but it has nonetheless been useful in combating any egalitarian subversion of American economic institutions. We refer to the social lubricant known as inflation.

Demands for income redistribution are expressed in the first instance as demands for more money. Not demands for more relative to someone else or some other class, but demands for more in the absolute sense. What practical men demand in the first instance is not a higher income share but a higher money wage or a higher money price. And inflation permits even the most "unreasonable" of these conflicting demands to be granted in large part. And when all the conflicting demands have been largely granted, class conflict has been averted at the expense of the general price level—meaning the fixed income group. The result, as regards production, output, employment, and the rate of economic growth? Normally favorable at the outset, since strikes and shutdowns can be avoided and employment maximized. The result, as regards the distribution of income and wealth? Very little—most of what inflation gives the workers in wage increases it takes away in higher prices. The position of the worker relative to his boss is practically unchanged, unless one or the other has the misfortune to heed appeals to save and hold his savings in liquid form. As regards redistribution, the whole process must be done over again next year, at the next contract renegotiation, or the next "farm parity" computations, usually with much the same inconclusive result.

IV. *Notes on Policy Paralysis*

When inflation serves a social function, such as lubrication of class conflict or evasion of basic issues of distribution, one may expect measures for its control and containment to be feeble and weak—to suffer from a certain policy paralysis. So they have in fact become in most capitalist countries, and so they are in the United States. This is the phenomenon known variously as "creeping inflation," "secular inflation," "ratchet inflation," and so on. Three specific examples from recent American experience will suffice: direct controls during the Korean War

(1950–52);[6] monetary policy during the inflation of 1955–57; the inflationary recession of 1957–58.

1. The outbreak of hostilities in Korea was followed in America by a buying spree. This raised retail prices to record levels before controls could be imposed, and while wage rates were held stable by pre-existing contracts. Some wholesale and manufacturers' prices followed retail prices up, but some did not. The result was a slight shift of income distribution to the disadvantage of labor and the advantage of raw material producers and retail merchants. When controls were in fact imposed, four courses were conceivable: (a) rolling back prices to their pre-Korean levels; (b) preventing further increases in either prices or wages, in other words freezing the pre-control situation; (c) granting wage increases to restore the purchasing power of the hourly wage, without compensating increases in selling prices; (d) granting wage increases as in (c) and passing them through to selling prices. Alternatives (a) and (c) would have restored the distributional balance as of June 1950, alternative (a) at the June 1950 price level and alternative (c) at the higher level which followed. Alternatives (b) and (d) would have perpetuated the disadvantage in which organized labor found itself by reason of its long-term contracts, and alternative (d) would have resulted in a further upward movement of the price level.

The Democratic Administration floundered helplessly between these alternatives. Alternative (a) was discarded as impractical administratively. Labor refused to accept alternative (b); resignation of the labor members of the wage control agency followed an attempt to adopt it. Business refused to accept alternative (c); the Supreme Court rejected as unconstitutional an attempt to impose it on the steel industry by Government seizure of the country's major steel plants. A long steel strike led eventually to alternative (d) which nobody wanted, whereupon the whole control system collapsed. Fortunately for American economic stability, the Korean fighting had died down without spreading to other areas, and raw material prices were falling by the time of the Supreme Court's decision in the steel seizure case. The experience indicates, however, the paralysis of the American economy in the fact of even a minor outbreak of inflation from a minor war, a paralysis which shows no signs of cure under the Republicans.

2. After a lapse due to farm and raw material price declines, inflation was renewed in 1955. The renewal occurred in a familiar manner—a wave of wage increases followed by a wave of price increases. It gave rise, however, to little

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[6] The greater fiasco of direct controls during World War II is not in point. True, from mid-1942 to mid-1946 the ostensible purchasing power of money was maintained so long as money was not used for purchasing—in other words, so long as large amounts were left to accumulate as liquid assets. A spurious stability indeed, since the value of these accumulations fell (as indicated by the quantity theory of money) as soon as the relaxation of controls permitted free use for spending purposes! What keeps this experience from being in point is the theoretical basis for the action taken, or rather avoided. The belief was widespread that peace would be followed by a major depression unless accumulations of liquid assets were available to maintain purchasing power. Following the experiences of 1946–49, however, no such theory could be propounded to explain the vagaries of policy during the Korean War.

concern. It was neither preceded not accompanied by war or other extraordinary expansion in government spending. (In this it differed from 1950–51.) It was supported neither by flight from money to goods nor by any pressing need to support government security prices. (In this it differed from 1946–49.) A Republican Administration had been elected in 1952 on the promise to halt inflation, and for three years it had kept its promise. (The two prior inflations had occurred under the Democrats.) There was in short little reason to forecast a failure of the monetary authorities to check the inflation by orthodox measure.

Yet failure is precisely what occurred. Money was not in fact tightened perceptibly for two years, while inflation gathered momentum—a classic case of policy paralysis. With the benefit of hindsight, the explanation is not difficult. Organized labor put the monetary authorities effectively on notice of its intention to press for wage increases regardless of monetary policy whenever such increase could conceivably be paid "out of profits"—a clear redistributive move. At the same time organized capital put the monetary authorities effectively on notice of its intention to pass on any wage increases into price increases and maintain its distributive share regardless of either monetary policy or the size of its profits. (The justification for maintenance of large profits was their use for internal investment and research.) Under these circumstances it was feared that restrictive monetary measures would bring on industrial strife if employers resisted wage demands,and reduce employment rather than prices if they acceded to such demands. There was as evidence the example of 1953–54, when a short "tight-money" recession had failed to bring industrial prices down. So nothing was done for two valuable years, beyond pious exhortations which touched on neither class conflict nor income distribution and did no good whatever. The economy seemed waiting for a miracle which did not happen.

3. Eventually, two years late in this writer's view, the monetary authorities acted. They tightened the money market. Organized labor and capital both held firm. Wages and prices rose more or less on schedule. Output and employment fell off. A full-scale recession developed over a six-month period in 1957–58. The issue became clear and sharp. Both the bell of unemployment and the gong of inflation were sounding: which would be heeded and which ignored? Would monetary and fiscal measures be used to cure unemployment while prices were rising, or used to cut prices while employment was falling?

The answer soon became clear. The Administration yielded without a struggle. Under what amounts to a political guarantee of "full employment at any price," the monetary authorities were put under pressure to ease interest rates and credit requirements. No Administration spokesman was permitted to put the case for waiting, for disinflation or deflation, before the public. At this writing (Autumn 1958) the recession is tapering off uselessly and the pace of inflation increasing. The stock market is booming in flight from the dollar. All this under a Republican "sound money" administration—criticized by the Democratic Opposition for not having yielded to inflationism sooner and more flabbily. As for the issues of income distribution and redistribution, they are dodged with equal agility by nearly all concerned. The exceptions are a few frankly redistributionist business-baiters in the labor movement and in extreme New Deal organizations like the Americans for Democratic Action.

V. *Will Inflation Save the System?*

Authoritative voices are never lacking to defend what is being done by persons in authority. And so it is here. A substantial minority, perhaps even a majority, of American economists support the inflationist line. Deflation, once started, is hard to halt. Full employment, once lapsed, is hard to restore. Economic growth, once retarded, is hard to accelerate. Class conflict, once aroused, is hard to pacify.

This is not the place to reply to these views in any detail. They have the backing of the American Keynesian School headed by Professors Alvin Hansen and Seymour Harris, not to mention such anti-Keynesian inflationists as Professor Slichter. Nor is it the place to present any policy alternative which might perhaps be more palatable in a democracy than the current inflationism.

All we can do is to put two propositions. First, that the burden of mollifying class conflict in America is coming to rest (to a dangerously increasing extent) on monetary inflation. Second, the efficacy of inflation in mollifying class conflict can hardly be of long duration. The evidence for the first proposition took up the first half of this essay. Let us turn now to the second.

The standard pessimistic note on inflation as a solution of the ills of the capitalist system was sounded by Lenin. His statement was made famous by Lord Keynes in *The Economic Consequences of the Peace:* "The best way to destroy the capitalist system is to debauch the currency." But Lenin was surely talking of catastrophic printing-press inflations (Germany, 1921–23; China, 1937–49) rather than the steady erosion of the purchasing power of money by the wage-price ratchet. His differences with the "stability through inflation" writers of the Sumner Slichter persuasion may be less than they appear on the surface.

Leaving Lenin out of the argument, the main difficulty with the inflationist solution for class conflict over issues of economic distribution seems to be this: Neither workers nor capitalists retain their "money illusion" very long, (By "money illusion is meant the belief that "a dollar is a dollar" and that purchasing power fluctuations will be of small amplitude and will offset each other.) Once this illusion has disappeared, the attitudes of all parties in collective bargaining and price administration undergo drastic changes. Rather than contenting themselves with mere money gains which can be granted to all parties at the cost of little inflation, the pressure groups now seek quite explicitly gains which will keep them ahead of the inflation they expect. And once this happens, either the inflation itself must be greater every year than was anticipated—in which case the monetary system must collapse—or distribution problems must be brought out into the open by the disappointment of substantial bodies of workers or business men. Such appears to be the history of inflation under capitalism. The writer knows no case in which it has mollified class conflict in the long run—rather the reverse!

Nor does the "national wage-price policy" frequently suggested by Keynesians do more than bring distribution problems into the open and exacerbate class conflict. If wages and prices are to be stabilized or otherwise regulated, so must be the relation between them—but at what level? Is regulation to involve maintenance, reduction, or increase of the labor share? Maintenance, reduction, or increase of the gap between the worker's scale of living and that of his boss? This is the challenge faced so unsuccessfully by the United States in both World War II and the Korean War. There is no evidence that it can be faced more successfully now.

Special reasons for pessimism regarding the future of inflation as a social lubricant arise from the Cold War between Socialist and capitalist economic camps. In the 'thirties the Socialist side could boast of full employment while the capitalist world was suffering depression; Socialist full employment was accompanied by substantial inflation. In the 'forties and' fifties the Socialists can boast of full employment with *falling* prices, while the worker under capitalism can allegedly retain his job only at the cost of eroding away his wages and savings by what the Marxists call "fictitious values" created by inflation.

The conflict is becoming prominent in the international sphere as well. The year 1958 may be memorable in economic history as the year when Socialist countries posed for the first time on a large scale as the great international friends of consumers oppressed by capitalist inflation, abroad even more than at home. Chinese underselling of Japanese textiles and light industrial products in South Asia, and the temporary wrecking of international tin and aluminum controls by Russian exports, indicate the shape of things to come.

VI. *Concluding Remarks*

In a growing economy like the American, an easy answer to class conflict (easier in the long run than inflation) would seem to lie in "biased economic growth," which we have already mentioned. Biased economic growth, with its bias in the direction of labor income, would permit the gap between worker and boss to be reduced quite steadily with neither absolute income loss to the average capitalist nor any danger or confiscation whatever. This solution has been suggested by many writers, including myself,[7] as the next step after inflation. It has however an important inadequacy. It overlooks completely the importance of the income gap between worker and boss for the social status, the self-esteem, and the productive incentive of individual capitalists in a materialistic society like the American. To this extent it glosses over one of the main difficulties.

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[7] M. Bronfenbrenner, "Some Neglected Implications of Secular Inflation," in Kenneth K., Kurihara (ed.) *Post-Keynesian Economics* (New Brunswick, N. J.: Rutgers University Press, 1954) pp. 53–57. This analysis, as well as the present essay, assumes large segments of the American economy insulated sufficiently from market conditions to permit quite substantial shifts in income distribution with only minor effects on production and growth.

Marxists deny on historical grounds that any dominant class will ever make even the slight surrender of relative position involved in biased economic growth, without being driven to far greater sacrifices by social revolution. We may grant that American capitalists, either in alliance with or domination over the higher ranks of politics and the military, constitute what Professor Mills calls the American "Power Elite."[8] We my grant, too, that American capitalists, especially in such lines as steel and automobiles, are doing all they can to prove Marx right in rapacious efforts to finance expansion from internal funds. To cite one illustration which crosses my desk as this is written:[9] "Net income, after taxes, for each ton of finished steel rose from $6.80 in 1952 to $17.91 in 1957, a gain in profit margin of 263 per cent." Professor Galbraith intends sarcasm when he says:[10]

> "The Marxian capitalist has infinite shrewdness or cunning on everything except matters pertaining to his own ultimate survival. On these he is not subject to education. He continues willfully and reliably down the path to his own destruction."

He may be less sarcastic than realistic.

Paradoxically, one main hope for greater long-run enlightenment and less inflationary rapacity among American capitalists arises from the economic competition of the Socialist camp, in other words from "peaceful co-existence" itself. As and if achievements of Socialism become more impressive, as and if they broaden out from heavy industry into consumers goods and housing, in no country (not even America) will capitalists be secure against expropriation or at least nationalization of their properties if their own record does not show up equally well. And this record, on which so much may depend, will include high wages and low prices, full production and high employment, in such wise as inevitably to pinch profits and profit margins much more tightly than either are pinched at present in American heavy industry and durable consumers goods production. This means a movement in the direction of income redistribution, biased economic growth, or as some Japanese writers have called it, "socialization of the flow," as a capitalist alternative to the Socialist revolution.

But this relative optimism is not a forecast. It requires a political climate in which democratic institutions are maintained, and public opinion placated as well as manufactured, so that effective comparisons with Socialist conditions can be made and can be influential. (It also requires effective resistance in Socialist countries of trends toward creation of "New Classes," "Sweatshop Arsenals,"

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[8] C. Wright Mills, *The Power Elite* (New York: Oxford University Press, 1954).

[9] *The Progressive*, September 1958. (Steel profits in 1952 were however unrepresentatively low because of a long steel strike during the Summer.)

[10] J. Kenneth Galbraith, *The Affluent Society* (Boston: Houghton Miffin, 1958), p. 68.

"Dictatorships over the Proletariat" and similar "Contradictions of Socialism.") Competitive co-existence may quite conceivably bring with it an anti-democratic reaction, some form of native Fascism, rather than the reactions we have just sketched, to keep American society immune from the virus of Socialist success. McCarthyism in the North and White Citizens Councils in the South may be warnings of something more serious in the future.[11] This sort of Right-wing movement in support of the privileges of an American minority can be expected to give rise to any eqally ruthless, fanatical, and intolerant Socialism as its antithesis.

These two menaces, one from the Right at home and one from the Left abroad, seem to be the principal ideological dangers facing the American economy when it awakens from its current inflationary pipe-dream. This writer's guesses are on the optimistic side, however, otherwise he might consider turning refugee—if were there an inviting country for an American to take refuge.

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[11] It is interesting to note the widespread belief that McCarthy's main financial backing came from a group of Southweastern oil men interested in maintaining and extending certain special privileges under American personal and corporate income tax laws. (These particular oil interests, incidentally, form no part of any international oil consortium. They are in fact the principal competitiors of the international "Empire of Oil," seeking among other things to ban Middle Eastern and Latin American oil from the American market.)

SIGNIFICANCE OF REALIZATION PRINCIPLE IN ACCOUNTING

——Displacement of the "increase in net worth" test by the "realization" test of income——

By TOSHIO IINO
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I. *Foreword*

Concerning the realization principle[1] it is often said as follows: "Though accrual basis has been accepted as a general principle an important limitation is attached to it, namely, the realization principle. It is often said that revenue is realized only when the goods were sold and the increase in the market price before the sale offers only the opportunity to obtain revenue but never can it be the revenue itself. It is quite obvious that realization principle is based on the conservatism in accounting."[2] The foregoing way of thinking can be more distinctly seen in the description that "realization principle serves as a brake to the accrual basis."[3] This way of thinking, as applied to the valuation of assets leads the following conclusion that though the assets as the close of the present period have to be valued at market price in principle they are exceptionally carried farward to the next period at cost in order to avoid the inclusion of unrealized profit from the viewpoint of conservatism. In other words, the valuation at cost is not a principle but an exception and the valuation at market price is a principle. At this point it is noteworthy what they say concerning the valuation of assets as follows "Every asset is carried forward to the next period with the expectation of receiving cash or cash-equivalent in future. Extremely speaking, it is nothing but the cost allocated to the future."[4] As far as such view is persisted on the nature of assets, it goes without saying that they have to be valued at cost. In view of the increasing emphasis being attached on the cost allocation rather than on the valuation of assets in the past as the result of recent emphasis on the determination of income in accounting there seems to be left no room to argue against the view that the amount to be deffered to the next period should be determined at cost. It is noteworthy that such a contradicting view, as mentiond before, is widely accepted in Japan as a theoretical basis of realization principle.

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[1] Realization principle is here used in the same meaning with sales basis and not in the meaning of the Underlying Concepts of "Accounting and Reporting Standards for Corporate Financial Statements, 1957 Revision"by the American Accounting Association.

[2] Tetsuzo Ohta, *Accounting*, Revised Edition, (in Japanese) 1951, Tokyo, p. 146.

[3] Koichi Sato, *Contemporary Accounting*, (in Japanese) 1952, Tokyo, p. 643.

[4] Tetsuzo Ohta, *op. cit.*, p. 15.

II. *Cash Basis and Cash Basis Accounting*

Realization principle is, as mentioned before, generally understood as an exceptional application to the accrual basis. If so, it is necessary for analizing this problem to have the significance of the accrual basis made clear. The accrual basis here in question is commonly viewed as a basis which has developed from cash basis. Therefore, we shall give some consideration to the cash basis at first.

The term "cash basis" has been used in many ways. For instance, Prof. Kester states as follows, "Under a strictly cash basis no entries are made on the books except at the time of receipt or disbursement of cash. In such cases, therefore, the books do not usually reflect the complete status of the business unit at a given time. Since the balance sheet purports to give a complete status, it thus becomes necessary to "adjust" the books to include thus unrecorded data before a proper balance sheet may be drafted therefrom."[5] From the above mention, it seems for us that he were conceiving the cash basis as a principle for recording the books, so to speak, the basis of recording ledgers at the time cash is received or paid.

However, it is more commonly used as a recognition principle of revenue and expense. In this view it is considered to be a principle "to recognize the fact of the accrual of expense at the point when cash was paid and the fact of accrual of revenue at the time when cash was received"[6] and therefore here it is understood that "no item of revenue is recognized until cash is received; no expense is thought to be incurred until cash has been disbursed."[7] According to this basis, "there is no recognition of a bad loss, since there is no recognition of revenue until cach is received; there is no recognition of depreciation, since the entire cost of the plant or equipment item is recognized as expense at the time of its purchase and payment."[8]

Frequently it has been said that cash basis is applicable to the determination of total profit (*Totalgewinn*). For instance, in the case of merchant adventurers of the Mediaevel Ages or single venture, "During the voyage he (the employed manager) stops at a number of ports, sells merchandise, buys other merchandise, and finally at the termination of voyage her returns home, all the merchandise having been sold for cash. He then sells the ship and deducts from the cash then on hand his own salary or share of the proceeds and returns the remainder to the owner."[9] The capitalist therefore can determine the net income from the voyage or total profit by comparing the amount received after the voyage with what they invested before the voyage, in other words, from the difference between receipt and disbursement on the voyage. In this case, the calculation of receipt and disbursement of the capitalist coincides with that of income on the voyage, thus making the basis in the meaning indicated in the preceding paragraph applicable in its real form.

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[5] Roy B. Kester, *Advanced Accounting*, 4th ed., 1946, New York, p. 10.

[6] Yasuichi Sakamoto, *Financial Statements*, (in Japanese) 1955, Tokyo, p. 88.

[7] C. Aubrey Smith and Jim G. Ashburne, *Financial and Administrative Accounting*, 1955, New York, p. 5.

[8] Wilbert E. Karrenbrock and Harry Simons, *Intermediate Accounting—Comprehensive Volume*, 1953, Cincinnati, p. 99.

However, such reasoning can be justified only from the standpoint of capitalist but not from the standpoint of successive venture or the individual voyage as an accounting entity independent of the capitalist. In the case of single venture, the difference between receipt and disbursement is the income deriving from the voyage, but all what was received or disbursed is not revenue or expense respectively. For in this case from the standpoint of voyage it is impossible to determine the total profit without recognizing the investment by capitalist as receipt and the returned invested capital as expenditure and putting them into the calculation of receipt and expenditure, since the determination of total profit is nothing but the determination of profit which is associated with the final liquidation and winding-up and therefore it is regarded as profit property which "was left after using assets to discharge the liabilities and reimburse the shareholders for their capital contributions."[10] Generally speaking, from the standpoint of enterprise and not of capitalist, it can be said that every revenue is received and every expense is disbursed untill the final dissolution of enterprise. In spite of this, however, it is quite evident that the amount of receipt does not coincide with that of revenue and that there arises a difference between disbursement and expense, since there exist such forms of receipt and expenditure as capital investment and its refund which are irrelevant to revenue and expense and, so to speak, neutral to the determination of income. It is clear under such situations that "every receipt and disbursement do not necessarily mean revenue and expense respectively"[11] in spite of the assertion that "the cash basis as a recognition principle of revenue and expense finds itself in its real form"[12] and that "the calculation of receipt and disbursement does not coincidence with that of income."[13] In such illustrations, it can clearly be noted the confusion of two different things, that is to say, the cash basis as a recognition principle of revenue and expense and the mechanism of the periodic income determination like cash basis income determinetion or cash basis accounting which implies to determine income through the calculation of receipt and disbursement.

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[9] Stephen Gilman, *Accounting Concepts of Profit,* 1939, New York, p. 66.
[10] A. C. Littleton, *Accounting Evolution to 1900,* 1933, New York, p. 216.
[11] Katsuji Yamashita, *General Theory of Accounting,* (in Japanese) 1955, Tokyo, p. 98.
[12] Katsuji Yamashita, *op. cit.,* p. 99.
[13] Katsuji Yamashita, *op. cit.,* p. 98.

III. *Evolution of Accrual Basis*

With the transition of the object of accounting from a "single venture" to a "going concern" and the closing up of the determination of periodic income in place of total profit due to the dividing whole life of an enterprise into artificial accounting periods, the cash basis as a recognition principle of revenue and expense has gradually proved itself to be irrational and the limitation of its application has become to be recognized, for the cash receipt or disbursement are fundamentally irrelevant to revenue or expenses. It is often said that under such circumstances, accrual basis has made appearance as a principle to replace the cash basis. Prof. Yamashita, for instance, says as follows: "Revenue and expense in a going concern does not necessarily bring about the cash receipt and disbursement simultaneously and therefore the cash receipt and disbursement of an accounting period can not be the principle to measure the periodic revenue and expense. The difference existing between revenue and expense of an accounting period and the cash receipt and disbursement is the same period can be said to be steadily growing in accordance with the increase of fixed assets and the development of credit system."[14] "Here lies the reason why the accrual principle (in the same meaning with the term usually called accrual basis—note by illustrator) has been paid attention as one to solve irrationality of cash basis as a recognition principle of periodic income."[15] Putting aside whether or not "the increase of fixed assets", as Prof. Yamashita says, has affected the shift from cash basis to accrual basis for the time being, the question here is whether the "development of credit system" would have such a significant on influences the appearance of accrual basis or not. To have it justified, it must be proved that until the appearance of accrual basis neither had there been the book entry in the case of credit purchasing or selling nor was the account receivable included in the determination of income. Is it true?

According to the investigation of historicians on bookkeeping and accounting, personal accounts can be found in the books since the relatively early stage in the development of bookkeeping. It is well known that the credit and debt or personal accout was the object of recording in the cross entry as a germinating form of double-entry bookkeeping. With the expansion of the objects of recording to the property or impersonal accounts, a proft and loss account and capital account it has been developed to the so called Italian bookkeeping as a primitive form of double-entry bookkeeping system. Explaining such circumstances that the relationship of credit and debt or personal account had been the object of recording since the relatively early days, Prof. Schmalenbach says, "The persons who do not keep records when they lend money or sell merchandise on credit and when the accounts receivable are collected or mlrchandise is returned must realize that they might dismiss unnoticed that it is not yet paid to them even in a small business dealing with no more than a few dozen kinds of items. Sometimes they might forget to urge the credit customers to pay the money at suitable time or sometimes they might injure the feeling of costmers and give the impression that they are loose in business by asking the customers to pay the money in spite of the fact that the payment was already made. Furthermore, those persons who do not keep records about their liability might have to run the risk of paying twice on the same liability or being unduly demanded payment. They might also be unable to have the good command of money."[16] Under these circumstances, the recording might be regarded as a memorandum.[17] With the completion of double-entry bookkeeping system it is needless to say that the recording of credit and debt being accompanied therewith by the recording of buying and selling of merchandise and cash receipt and disbursement became as an aid to the measurement of financial position or an accomplishment of an enterprise. Pacilo asserts that when there is a sale of merchandise or other goods the transaction should be recorded as a receivable if it were not the receipt of cash, proposing that "when the sale was made partially on a cash basis and partially on a credit basis merchandise should be made as creditor and the customer should be made as debtor. Afterwards it is necessary to make one more entry, that is to say, to make the customer as creditor by the amount cash was received and make cash or bank which received cash for the seller as debter."[18] In his work the problem of financial statements can not be seen at all. This is because "proprietors were in personal contact with their affairs and the occasional computation of a profit-and-loss account in the ledger was ample for their needs."[19] However, afterwards with the periodical settlement of account in order to prepare financial statements having been given attention gradually, the accounts receivable at the end of an accounting period was put on the balance sheet together with other assets, liabilities and capital and thereon the net income was determined. For example, in the balance sheet illustrated by Savary in his "Le Parfait Negociant", already account receivable is represented together with merchandise and cash and the net income is determine therein. Accordingly in this case, it should be understood that revenue from the sale is recognized in reference to the creation of the account receivable and therefore the establishment of a credit. This basis is often called so "credit basis" or "obligation principle."

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[14] Katsuji Yamashita, *op. cit.*, p. 100.
[15] Katsuji Yamashita, *op. cit.*, p. 101.

It might now be clear that the development of credit system was irrelevant to the displacement of cash basis by accrual basis as far as the recognition of revenue is concerned. As above mentioned, it is clear that when goods are sold on credit, not receive any cash, merchant records the credit on the book, with the purpose of the management of property at first, thus making it difficult for us to prove that there was no book-entry until the cash was received. It will be concluded that in the credit transactions credit basis has long been applied and there has been no room for the application of cash basis at all.

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[16] E. Schmalenbach, *Dynamishe Bilanz*, 5 Aufl. 1931, Leipzig, S. 56.

[17] Concerning the meaning of the record of credit and debt in the process of development of double-entry bookkeeping system, refer A. C. Littleton, *op. cit.*, pp. 28 ff.

[18] Paciols, after describing the booking procedure in purchasing merchandise and other properties in detail, is quoted as saying in his work, "when they were sold the procedure should be contrary to the above example." The booking procedure of sale as applied in the foregoing example of purchase is understood to be as is described here.

[19] A. C. Littleton, *op. cit.*, pp. 84–85.

The item in which cash basis was irrational and inapplicable is so called "suspense account," for in such an item we can find the periodical inconformity between expense and disbursement and between revenue and receipt most concretely and distinctly. Referring to this problem Savary approaches "the matter when he recommends that the person preparing to close the books make up, among other things, a list of what he owes to assistants for wages and again when he advises that expense accounts should confine themselves to the following year if the profit is not found sufficient to cover them."[20] According to Prof. Littelton, Pilsen in his work of 1877 lists such items as rent to be paid, prepaid rent, charges on gas used but not yet, fuel, stamps, stationaries not yet exhausted in the columnar balance sheet ·as inventories in red ink[21] and A. G. Cairnes in his work of 1891 records such items as salaries, rent, tax, interest yet to be paid by the enterprise either on the debit of income or on the credit of debt and to the same time similar items yet to be received by the enterprise either on the debit of asset or on the credit of income in the columnar balance sheet, insisting that such recording results in "nearer true gains."[22] Also according to the investigation by Prof. Littleton it is only ten per cent out of 50 text books on bookkeeping published between 1788 and 1899 that takes up the accruals.[23] With the thinking of accrual and deferment, though gradually, being introduced into the accounting the so called accrual basis has gradually proved itself to be the principle to recognize revenue and expense in such cases when services are offered or received continually over a certain period of time, pushing away the cash basis into the background.

Needless to say, as pointed out by many authors,[24] the increase of fixed assets marked a turning point in the shift from cash basis to accrual basis through the necessity of depreciation. Here it would not be necessary to make further comment about this point.

As having been analysed hereto suspense items, namely, accrued and deferred items, and the necessity of depreciation have brought about the collapse of cash basis as a recognition principle of revenue and expense and the evolution of accrual basis as a principle to replace cash basis. Then, when and how the realization principle was brought forward?

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[20] A. C. Littleton, *op. cit.*, p. 150.

[21] A. C. Littleton, *op. cit.*, pp. 150–151.

[22] A. C. Littleton, *op. cit.*, p. 151.

[23] A. C. Littleton, *op. cit.*, p. 150, footnote.

[24] With regard to the development of depreciation, see A. C. Littleton, *op. cit.*, chapter XIV Depreciation, pp. 223ff. George O. May, *Financial Accounting*, 1943, New York, chapter VII Depreciation, pp. 118ff.

IV. *Evolution of Realization Principle in America*

According to the report by the Study Group on Business Income, the American Institute of Accountants, "The postulate of realization is of quite modern origin. In America at least its acceptance could not be related back to any date prior to the First World War."[25] According to their study the realization principle was not approved not only in accounting but also in law and economics before the World War I. This is because they consider profit as an increase of net worth.[26] For instance in the Spanish Prospecting Co. case (1911), Lord Justice Fletcher Moulton said: " "Profits" implies a comparison between the state of a business at two dates usually separated by an interval of a year. The fundamental meaning is the amount of gain made by the business druing a year. This can only be ascertained by a comparison of the assets of the business as the two dates."[27] Prof. Dickinson insists on the "increase in net worth" concept of income in his work which is admitted to be one of the most authoritative books of accounting in Europe and America through the beginning of this century, asserting that in as much, however, as the ultimate realization of the original invest is deferred for a long period, during which partial realization is continually taking place, it becomes necessary to fall back on estimates of value at certain definite periods, and to consider as profit or loss the estimated increase or decrease between at any two such period."[28] Furthermore, Prof. Montgomery suggests that the net income should be measured by comparing the balance sheets or the net worth of two different dates.[29]

The "increase in net worth" theory in the determination of net income is, as is well known, a method to determine the net income by the comparison of net worth of the two dates. Therefore, the net income is regarded as the difference of net worth, the difference between assets and lialibities. The increase or decrease of net worth other than paying in or deducting from the capital is recognized as revenue or expense. The "increase in net worth" theory may be classified into two patterns, namely, one insisting on the asset valuation at market price, the other at cost, of which the former view was influential in American at that time. Prof. Dickinson, for instance, insisting on the valuation at market price refers to this problem, "It would be unfair, especially in a young and growing country to exclude appreciation of capital assets from the accounts."[29] It is also widely known that Profs. Paton and Stevenson in 1918 insisted on the valuation of assets at market price in their mutual work "Principle of Accounting." The proposition of the market price basis must have come from many reasons. However, as Mr. May points out, the fact that there had been a steady rise in wholesale price index since 1896 and when Prof. Dickinson finished writing up his work the index was roughly 50 per cent greater than in 1896 and that it was really 298 higher in 1918 when Profs. Paton and Stevenson wrote up their work must have provided one of the most important reasons for it.[30]

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[25] Study Group on Business Income, the American Institute of Accountants, *Changing Concepts of Business Income*, 1952, New York, p. 19.
[26] Study Group, *op. cit.*, p. 23.
[27] Study Group, *op. cit.*, p. 24.
[28] Arthur Lowes Dickinson, *Accounting, Practice and Procedure*, 1914, p. 67.
[29] Robert H. Montogomery, *Auditing, Theory and Practice*, revised and enlarged edition, George O. May, *op. cit.*, p. 81.

As far as the "increase in net worth" theory based on the market price valuation of assets was a governing view in the income determination as was seen hereto it is quite natural that the realization principle which is associated with the cost valuation of assets as a matter of consequence was not accepted generally at that time. However, after the World War I the price level had become increasingly higher and in 1922 when the price was the lowest throughout the seven years succeeding the War the index showed 140 per cent greater than the prewar level and in 1920 when the price was the highest it was indeed 220 per cent higher than the prewar average. In view of such a tendency of price, enterprises apparently rushed to make the revaluation of assets, especially fixed assets, and paid dividends from the revaluation surplus arising therefrom. Here now appeared the criticism on the valuation of market price. It will be the reason why the Special Committee on Cooperation with Stock Exchanges of the American Instutite of Accountants in the first paragraph of Exhibit 1 of the first report to the Committee on Stock List of the New York Stock Exchange dated September 22,1932, in expressing against the introduction of unrealized profit, suggested as follows.

"I. Unrealized profit should not be credited to income account of the corporation either directly or indirectly, through the medium of charging against such unrealized profits amounts which would ordinarily fall to be charged against income account. Profit is deemed to be realized when a sale in the ordinary course of business is effected unless the circumstances are such that the collection of the sale price is not reasonably assured."[31]

It is indeed noteworthy that the idea of realization principle was seriously and even at the top of the suggestions taken up by the American Institute of Accountants itself independently of the views of individual scholars.

Some years before this, the Revenue Act of U.S.A. embodied the concepts of the "complete transaction" and "cash or its equivalents" in its revision of 1918.[32] The Supreme Court in Eisner v. Macomber rules that "Income may be defined as the gain derived from capital from labor, or from both combined, provided it understood to include profits gained through a sale or conversion of capital assets,"[33] emphasizing severance rather than gain herien and thereby assuming the position that no gain is conceivable being realaized. It has to be given the closest attention that the realization principle has become to be given emphasis in the laws.

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[29] Arthur Lowes Dickinson, *op. cit.*, p. 80.
[30] George O. May, *op. cit.*, p. 91.
[31] Study Group, *op. cit.*, p. 26.
[32] George O. May, *op. cit.*, p. 26.

As above mentioned, is noteworthy that with the rise in price level following the World War I as a turning point in America the realization principle has become to be suggested as a principle to replace the "increase in net worth" though it is not clear what was the main factor to have it generally accepted in other countries.

V. *Significance of the Evolution of Realization Principle*

What will be the significance of coming into existence of the realization principle as a basis of revenue recognition? Assuming that the realization principle has become to be suggested as such against the market price valuation as indicated before it has to be construed as the principle of revenue recognition on the goods or services homogeneous thereto. Until coming into existence of this principle, however, the so-called credit basis or obligation principle had been applied to goods and services provided they were sold or delivered and while they are stored they will be valued at market price excepting a few cases like in the capital assets. If so, in what relations should these there bases, namely, realization principle, obligation principle and market price basis of asset valuation be?

Realization principle which recognizes revenue when goods are sold is often said to be the same with the obligation principle. This must be because that when a good is sold for ¥100 will be recorded in the account receivable as well as in the sales account. However, what must be noted here is that the structure of double-entry bookkeeping or the technique of double entry in credit and debit makes the fundamental difference between them unclear. Realization principle being a principle of revenue recognition, not of assets, ¥100 which is recognized by this principle is the amount of sale and not of account receivable. On the contrary, the obligation principle being such as to put a monetary valuation on the title when it was transfered of secured, it is not the amount of sale but the amount of account receivable that is recognized by this principle.

From this reason, we can say that what are recognized by both principle are quite different and that the recognition is directed towards the different ends. This can be clearly illustrated in the income determination by both principles. Suppose, for instance, that the cost of goods sold in the foregoing example should be ¥90, gross income on sales under both principles will be equally ¥10, ¥90 being deducted from ¥100. This is true. However, it must be noted that the substance of ¥100, or ¥90 is quite different depending upon which principles to take. Under the realization principle we determine gross income on sales of ¥10, goods sold cost of ¥90 being deducted from the net sales of ¥100. However, in the case of obligation principle ¥100 from which deduction is made is account receivable as an increased asset and ¥90 to be deducted therefrom is the amount of goods sold. In other words, it should be understood that in the former income is considered as the excess of revenue over expense and that in the latter as the net increase of asset, the amount of the decreased asset being deducted from the amount of the increased asset, so to speak, as the difference between capital collected and capital invested. Consequently, realization principle is one of the basis of the income statement approach of net income, while the obligation principle is the basis of the balance sheet approach of it.

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[33] Study Group, *op. cit.*, p. 26.

It is often said about the relation between realization principle and the market price basis of asset valuation that the latter which records in the book the gain or loss arising from asset valuation is in a kind of view the other phase of accrual basis and that it is from the stand point of conservatism not to recognize revenue on the goods until they were sold and therefore defered to the next period at cost. We have already described that this view is accepted widely in Japan. However, as indicated before, accrual basis as a developed form of cash basis was originally expected to be applicable to a very limited items and not so widely as is generally understood today. It has therefore to be contended that to use the term "accrual basis" in reference to write-ups and write-downs is not only improper but also the expansion of concept except being used by the followers of market price basis of asset valuation as can be seen from the circumstances that the accrual basis as a recognition principle of revenue and expense has been conceived and developed as such as to solve the irrationality arising from the cash basis as applied in such items of revenue as the recognition of revenue accrued but not received and deferment of revenue received but not accrued and in such items of expense as the recognition of charge paid but not accrued, charge accrued but not paid and depreciation.

One of the important reasons why the term "accrual basis" has become to be used so widely seems to be the unclear understanding of the distinction between accrual basis as a recognition principle of revenue and expense and accrual basis as a mechanism of the income determination or accrual basis accounting. Accrual basis accounting here means a mechanism to determine the net income of a given period "the revenue earned during that period less the costs and expenses incurred in earning that revenue."[34] Therefore what is important here is the existence of matching between the revenue from which deduction is to be made and the expense which is to be deducted[35] and only this corresponding relationship is important here irrespective of the fact that such revenue and expense be recognized by the accrual basis in its true meaning or cash basis or furthermore write-downs or depending upon the case even write-ups should be included in the computation. It might perhaps be unconsiously and widely misunderstood so that all the revenues and expenses including the write-ups and write-downs now in question are recognized by the accrual basis only because they are participating in the income determination of accrual accounting as revenue and expense.

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[34] A. A. Fitzgerald and L. A. Schumer, *Classification in Accounting*, 1952, Sydney, p. 29.

As was already mentioned, the realization principle has become to be suggested as a result of critical consideration on the market price valuation of assets. Realization principle is one of the basis of the income statement approach of net income and the valuation of assets is one of the procedures of the balance sheet approach of it.

Thus, the evolution of realization principle replacing the balance sheet approach of credit basis in the determination of income means the downfall of the balance sheet approach or "increase in net worth" theory as a principle of income determination[36] and therefore the complete change-over of the idea of income determination from the balance sheet approach to the income statement approach and further more, as the balance sheet approach having the assets, liabilities and capital as the elements of caluculation and the income statement approach having revenue and expense as its elements it has to be regarded as suggesting the shift of emphasis from the balance sheet to the income statement.

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[35] W. A. Paton and A. C. Littelon, *An Introduction to Corporate Accounting Standards*, **1940**, Chicago, p. 6.

[36] Study Group, *op. cit.*, p. 27.

THE DIFFERENTIAL EMPLOYMENT STRUCTURE OF JAPAN

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I. *Introduction*[1]

When economists discuss the characteristics or features of the Japanese economy, it is usual to speak of the rapid growth rate, the high rate of saving, labor's low relative share and the like. Here, however, I would like to deal with the structural aspects. It is often said that the Japanese economy is a combination of both Western-type industry and Asian-type agriculture. In reality, in less than a century since the Meiji Restoration in 1868, industrialization has developed very rapidly along the line of building up a Western-type factory system; and nowadays, large-scale factories are producing many modern commodities to compete with advanced countries. But, at the same time, there still remain many small-scale firms employing large numbers of workers, and also a large number of very small-scale farms throughout the country. Thus the Japanese economy is unique in its industrial structure, which is quite different both from advanced economies of the Western type and from backward economies of the Asian type.

As is shown in Table 1, in Japan the number of workers employed by small-scale firms of less than 50 employes comprises a little more than half of the total number of workers in manufacturing; while in the move advanced countries it is only 15–16 per cent. It is noted that the percentage of workers employed by the largest-scale firms in Japan is not very low as compared with that of medium-scale firms.

Table 1 *Distribution of Wage-earning Workers according to Size of Establishment in Manufacture*

(%)

Countries / Year / Number of workers	Japan	U.S.A.	U.K.	West Germany
	1954	1954	1949	1955
1— 9	23.1	3.8	4.8[1]	2.7
10— 49	29.2	12.5	11.3[2]	11.4
50— 99	9.0	9.4	10.1	10.0
100—499	17.1	29.1	32.6	30.8
500—999	6.5	12.5	13.1	13.1
1000 and over	15.1	32.6	28.1	32.0
Total	100	100	100	100

Remarks:
Japan...........Survey of Establishments
U.S.A...........Census of Manufacture
U.K.............Production Census
West Germany..Statistical Yearbook
Notes: 1. 1–10, 2. 11–49.

Data of a similar kind are not available for other industries, but it is clear that there is also a large number of very small

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[1] Hearty acknowledgement is due Dr. Alan Gleason for editing my English and giving helpful comments, and Messrs. T. Noda and T. Sasaki and Miss Y. Ando for helping me in editing and arranging tables and charts.

Table 2 *Composition of Labor Force according to Employment Status*

(%)

	Japan	U.S.A.	U.K.	France	West Germany
	1956	1950	1951	1954	1950
	(Male)				
Self-employed	33.3	19.8	8.4	25.9	18.8
Wage-worker	49.6	78.7	91.5	67.7	76.7
Family-worker	17.1	1.5	0.1	6.4	4.5
Total	100	100	100	100	100
	(Female)				
Self-employed	14.8	5.9	4.3	14.4	7.1
Wage-worker	29.6	91.1	95.2	59.1	60.4
Family-worker	55.6	2.9	0.5	26.5	32.0
Total	100	100	100	100	100
	(Total)				
Self-employed	25.7	15.9	7.2	21.9	14.8
Wage-worker	41.4	82.1	92.6	64.7	70.8
Family-worker	32.9	1.9	0.2	13.4	14.4
Total	100	100	100	100	100

Remarks: Japan from "Labor Force Survey," other countries from "Yearbook of Labor Statistics" (I.L.O.)

establishments in other sectors, especially in service industries, in which family enterprises prevail widely as in the case of agriculture. The composition of labor force according to employment status given in Table 2 will be a great help in illustrating Japan's characteristics in this respect.

The number of hired wage-workers in Japan comprises only 40 per cent (50 per cent in the case of males and 30 per cent in the case of females), while the numbers of the other two categories, self-employed and family-workers, total almost 60 per cent, a very high figure as compared with that of more advanced countries. Thus, the predominance of small-scale firms is closely related to the wide-spread existence of family firms, where unpaid family workers play a great role in carrying out production of goods and services.

Such an employment structure is a historical product of the capitalistic development of the Japanese economy up to the present, in the sense that this structure has established its root in an economy where the traditional pattern of production still remains nation-wide. A structure such as this has often been characterized as a "dual economy" which means that both the modern capitalistic element and the old traditional element co-exist side by side. I am not opposed to this characterization. However, as far as employment is concerned, I think it is more appropriate to describe such a situation as a differential employment structure for reasons which will be explained later. It is primarily this structural problem that I would like to discuss in this paper. It is my view that in the case of Japan's type of structure, the theories or concepts of employment or unemployment which have so far been developed will not necessarily be valid in their applications.

II. *Empirical Observations*

First, let us begin by illustrating the real employment and wage situation in Japan through an analysis of a curious statistical result. In the area of international comparisons of labor's relative share, a very simple measure, namely, the ratio of income per wage worker to the national income per capita of all people gainfully occupied is often used. The numerical values of this ratio are 120 per cent for Japan (in 1953), 60 per cent for U.K. (in 1950), 80 per cent for U.S.A. (in 1951) and 90 per cent for West Germany (in 1950). The highest value for Japan seems strange at first glance, but actually it merely reflects the very low level of income of the non-wage working classes, in particular that of unpaid family workers. This is because of a hidden bias in the method of computing the ratio, a bias resulting from the implicit assumption that all non-wage workers will get the same average wage as earned by wage-workers. Because of the high degree of unreality of this assumption in Japan, the ratio gives a result according to which the total income earned by labor exceeds the total national income! This can be demonstrated by the following simple equation where the notation is as follows:

P, total labor; P_w, hired wage-worker; P_e, non-wage workers ($P=P_w+P_e$); Y, national income at factor cost; E, non-wage income as computed by the above-mentioned assumption; W, wage income; R, relative per capita share of national income per worker received by wage-workers.

$$R=\frac{W}{P_w}\Big/\frac{Y}{P}=\frac{W}{Y}\cdot\frac{P}{P_w}$$

$$=\frac{W}{Y}\left(1+\frac{P_e}{P_w}\right)=\left[\frac{W}{P_w}\cdot P_e+W\right]\Big/Y$$

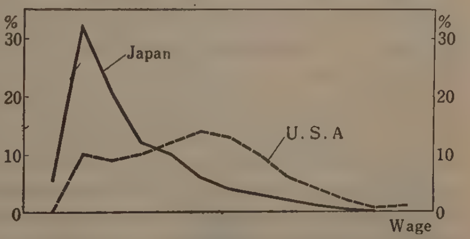
Since, $E=\frac{W}{P_w}\cdot P_e$, hence, $E+W>Y$ in the case of Japan where $R>1$.

Where there is little difference in the average incomes of wage-workers and non-wage workers, the formula gives useful results. But, in cases such as Japan, where unusually wide differentials exist, the formula gives a quite unreasonable result.

Secondly, it is noticeable that within the wage-workers' group, wage differentials show a large dispersion because of the large proportion of low-wage workers as compared to the more or less normal patterns of the advanced countries.

For example, the frequency distribution of wage rates in Japan is quite different from that of the U.S.A., as may be clearly observed in Chart 1. In Japan's case there is a strong bais toward the low level group, while the U.S.A.'s distribution is rather smooth. Incidentally, the coefcient of dispersion is very high, being 102 in Japan's case as against 43 in the case of the U.S.A. These statistics show respectively the existence of a large number of low-wage workers and of sizable wage differentials.

Chart 1 *Frequency Distribution of Wage Rates*



Remarks: Quoted from Ministry of Labor's Survey. Source: Japan from the "Special Survey of Individual Wages," U.S.A. from "Monthly Labor Review." Both relate to manufacture. Unit: Japan, monthly wage earnings; U.S.A. wage rates per hour (both in April 1954).

Now, we would like to take up

Table 3 *Wage and Productivity Differentials in Manufacturing Industry*

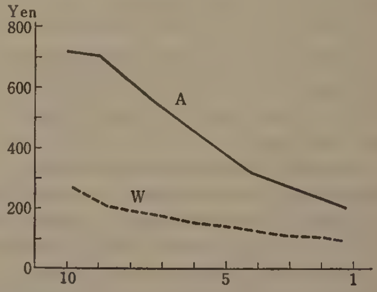
Scale (number of workers)		Value added per worker (A)	Wage earnings per worker (B)	(B)/(A) %
1	4—9	197 (28)	87 (32)	44
2	10—19	236 (33)	107 (40)	45
3	20—29	265 (37)	117 (43)	44
4	30—49	303 (42)	126 (47)	42
5	50—99	364 (51)	141 (52)	39
6	100—199	450 (63)	158 (59)	35
7	200—299	532 (75)	176 (65)	33
8	300—499	594 (83)	199 (74)	34
9	500—999	683 (96)	217 (80)	32
10	1000 and over	714 (100)	270 (100)	37
Average		364	144	40

Remarks: Unit: thousand yen. Figures are per year in 1955.
Figures in brackets show indices.

comprehensive data relevant for our purpose, namely, recent results of *Industrial Statistics*, compiled by the Ministry of International Trade and Industry, which are summarized in Table 3 and illustrated by Chart 2.

These data show that both productivity and wage differentials form almost straight lines sloping downwards from bigger enterprises to smaller ones and that the slope of the productivity line is steeper than that of the wage line. The latter fact is natural even in the case where the relative share of labor is the same for each scale of establishment, but here it is observable that the difference of slope is larger than in such a case.

Chart 2 *Wage and Productivity Differentials in Manufacturing Industry*



Remarks: (A) Added value per worker (net value productivity). (W) Wage. The numbers on the horizontal axis denote classes in terms of number of the workers as designated in Table 1.

The productivity level of the workers in the smallest firms (4 to 9 workers) is less than 30 per cent of the level of the largest firms (more than a thousand workers) while the wage level of the smallest firms' workers is little more than 30 per cent of the largest firms' level. This is really a remarkable differential and it prevails throughout manufacturing industry.

Next, by using the *Farm Economy Survey* compiled by the Ministry of Agriculture and Forestry, we calculated corresponding data for agriculture

Table 4 *Productivity and Income Differentials in Agriculture*

Income class (ten thousand yen)	Agricultural net income produced per agricultural worker	Farm net income (including non-agricultural) per worker
1 under 10	32 (17)	51 (14)
2 10—15	48 (26)	151 (40)
3 15—20	60 (32)	137 (36)
4 20—25	68 (36)	165 (44)
5 25—30	77 (41)	188 (50)
6 30—40	90 (48)	205 (55)
7 40—50	106 (57)	224 (60)
8 50—70	129 (70)	263 (70)
9 70 and over	186 (100)	375 (100)
Average	96 (52)	96 (52)

Remarks: Unit: thousand yen. Average annual figures for 1955 period. Figures in parentheses show indices.

shown in Table 4.

Here also we find a wide range of income and productivity differentials for various farm household income groups. The lowest group produces an income only 17 per cent of that of the highest group, a difference which is even larger than that of manufacturing industry. In Japanese farming, incomes earned by jobs off the farm constitute a considerable part of total farm income. The figures in the last column which include these incomes, however, do not change the wide differential tendency as shown by the percentage figures in the table.

These two sets of data are difficult to compare because of such factors as the fact that, in one case, scale is measured in terms of income and, in the other case, in terms of number of hired workers, but it seems useful to show them together rather than separately in order to illustrate the employment structure of the whole economy. It is assumed that the tertiary sector follows the same pattern. In this way the following points may be noted:

(1) The net value productivity of the lowest income class in manufacture is very close to that of the highest income class in agriculture. In reality there are many manufacturing firms the scale of which is even smaller than the class just mentioned, namely the class of less than three workers about which we have no adequate data available as to value productivity. In view of this situation, it will be assumed that the productivity curve as illustrated in Chart 2 is more or less a continuation of the productivity curve which could be inferred from the figures in Table 4. However, the distribution of the income from the product at this border line class differs greatly between manufacture and agriculture. In manufacture, wage earnings per year are 87 thousand yen and labor's relative share is around 44 per cent; while in agriculture, average product per worker, which is almost the same as wage earnings in manufacture,

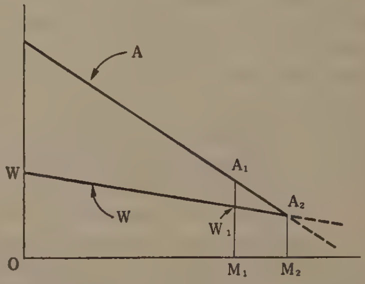
is a mixed income of the farm household consisting of rent, profit, and interest as well as wages, if we neglect the very small amount of wage payment for hired workers. On the side of small-scale manufacture, there are also a considerable number of self-employed and family workers, but in this case the proportion of hired labor is much larger. Where the total family income in manufacture is estimated to be around 700 thousand yen, which is very close to the family income of the top classes in agriculture, there may be a kind of border line between capitalistic enterprise (we mean, in this case, an enterprise in which most of the workers are hired) and family enterprise in which almost all the workers are self-employed.

(2) The average wage earnings in manufacturing firms falling in the two smallest-size groups are around 90–100 thousand yen, which is almost equal to the level of farm income for the average-size enterprise in agriculture.

(3) Turning to the highest class in manufacture, the wage earnings per worker are 220–270 thousand yen, which exceeds slightly the total income per worker for the highest class in agriculture. If we consider the qualitative difference between workers in manufacture and agriculture, these two figures are not significantly different. On the other hand, the income of a proprietor who belongs to the lowest class (say hiring less than 3 workers) might be assumed to be near the level of wage earnings of the highest class workers, though adequate data are not available as yet.

These observations may be enough to suggest that small proprietors' income, mixed income of the upper level family farms, and wage earnings of upper class workers, are not determined independently but are closely related to each other in the general framework of the demand for and supply of employment.[2]

Chart 3 *Productivity and Wage Differentials*



III. *Some Theoretical Observations*

Chart 3 is used to illustrate continuous wage and productivity differentials as observed in the previous section in order to provide a basis for a theoretical model. Both wage and productivity figures are shown on the vertical axis and the scale of enterprise in terms of capital stock per worker

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[2] Of course, a mechanical comparison of urban workers and farmers in terms of money income alone is lacking in accuracy. The so-called "psychic income" gained by farmers, as well as the consumers' price difference between urban and rural districts and so forth, should be taken into account in a comparison of real income. Consideration of these factors would reduce the differentials but probably not sufficiently to weaken seriously the broad conclusions drawn from the data presented.

(capital intensity) is shown on the horizontal axis.

We have no good data available as to the capital intensity classification. However, I think a capital intensity scale is theoretically better than the number of workers classification already adopted in the previous table.

Taking into consideration some data on the capital intensity classification of incorporated companies, we assume here that the above-mentioned differentials will also be valid for a capital intensity classification and that there is a close correlation between capital intensity rank and number of workers rank. In other words, the smaller the enterprise in terms of the number of workers the lower the capital intensity will be.

Line A denotes continuous differentials of average net value productivity and line W continuous wage rate differentials. On the horizontal axis, attention is drawn to two points; first, M_1, representing the border line between capitalistic enterprise and family enterprise, and second, M_2, denoting the marginal point of family enterprise, in the sense that the net productivity is just sufficient to cover wages. The two points A_1 and A_2 on line A show the average net value productivity at M_1 and M_2 respectively. The most important features of this chart are: first, the degree of wage differentials is much smaller than that of productivity differentials, secondly, capitalistic enterprise and self-employment enterprise do not constitute two independent sectors but comprise a continuous, interrelated economic structure.

I would like to discuss first the capitalistic enterprise sector, where large scale enterprises and medium-and-small-scale enterprises co-exist. According to the statistical data available, the following relationships are decidedly clear. Using the notation α and β, representing large-scale enterprise and small-scale enterprise respectively, (1) the average net value productivity of α is greater than that of β, (2) the wage rate of α is higher than that of β, (3) the capital intensity of α is larger than that of β. (These relationships have already been mentioned above)

By denoting capital stock as K, number of labor force employed as N, output as Y and wage rate as ω, the above relationships can be arranged as follows:

$$1)\quad \frac{Y_\alpha}{N_\alpha}>\frac{Y_\beta}{N_\beta},\qquad 2)\quad \omega_\alpha>\omega_\beta,\qquad 3)\quad \frac{K_\alpha}{N_\alpha}>\frac{K_\beta}{N_\beta}.$$

Now the average profit rate of enterprise can be expressed by the terms mentioned above as follows; $\frac{Y-N\omega}{K}$, which can easily be changed to the expression $(1-\frac{N\omega}{Y})\Big/\frac{K}{Y}$, where $\frac{N\omega}{Y}$ is labor's relative share and $\frac{K}{Y}$ is the capital coefficient. If we represent these latter two terms by R and C, an equal rate of average profit for enterprises α and β can be expressed as follows;

$$\frac{1-R_\alpha}{C_\alpha}=\frac{1-R_\beta}{C_\beta},\quad \text{or}\quad \frac{1-R_\alpha}{1-R_\beta}=\frac{C_\alpha}{C_\beta}.$$

This equation simply enables us to show the relationship between both types of enterprises in terms of the capital coefficient and labor's relative share. If the equality is to be maintained, it is clear that if $C_\alpha \lesseqgtr C_\beta$, then $R_\alpha \gtreqless R_\beta$.

Next, let us assume that both α and β enterprises as going concerns adopt certain techniques which determine a certain production function $[Y=(K, N)]$ at a given wage level and capital price. This means, in other words, that the average productivity of labor $\frac{Y}{N}$, capital intensity $\frac{K}{N}$, and capital coefficient $\frac{K}{Y}$ or C are all determined by production functions. From actual observation of the statistical data available we can introduce the following quantitative relationship between enterprises α and β with respect to the capital coefficient, namely, $C_\alpha > C_\beta$. As for relative share, $R_\alpha < R_\beta$ is observable from actual data. Hence, in theory, it is possible to assume some equilibrium state between α and β based on the conditions $C_\alpha > C_\beta$ and $R_\alpha < R_\beta$. This means that in the case of α, the disadvantage of having a greater capital coefficient due to technological requirements is apt to be compensated for by the advantage of the smallness of labor's relative share, which shows that in larger-scale enterprises, the ratio of the wage rate to productivity is smaller than in the case of smaller-scale enterprises. In actuality, the profit rate of α may be greater than that of β in the long run when the degree of $R_\alpha < R_\beta$ is apt to be greater than that of $C_\alpha > C_\beta$ and this depends mostly on the wage differentials in relation to the productivity differentials.

Although this is a very rough sketch of the economic structure in which we are interested, employment under conditions of wage differentials should, I believe, be analysed in terms of the framework of such a structure. Since it is reasonable to suppose that the marginal productivity of labor of α enterprise is higher than that of β, it is quite obvious that the demand price of labor should show a differential, but in reality the larger-scale enterprises can hire labor at a level lower than the demand price because the supply price of labor is apt to be

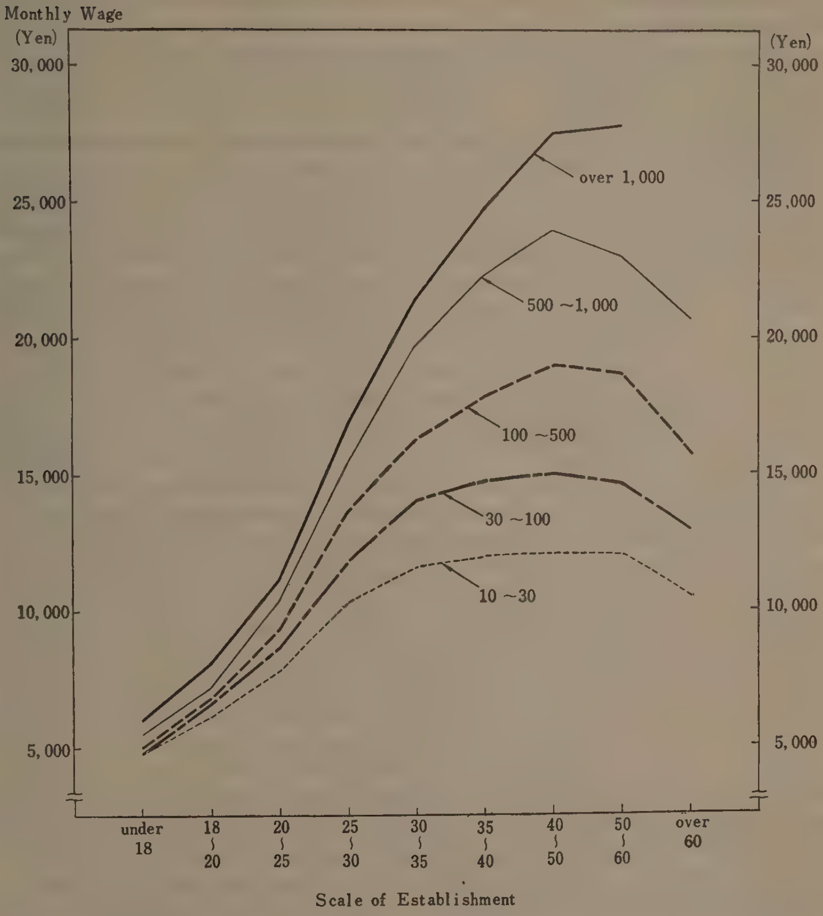
Table 5 *Wage Distribution by Establishment Scale and Workers' Age in Manufacturing Industry*

Unit: yen a month

Age \ Scale	Average	1,000 and over	500 ≀ 1,000	100 ≀ 500	30 ≀ 100	10 ≀ 30
Average	13,659	17,435	14,816	12,478	10,807	9,379
under 18	5,175	5,993	5,450	4,960	4,799	3,726
18—20	7,072	8,027	7,229	6,784	6,579	6,084
20—25	9,728	11,119	10,334	9,322	8,622	7,799
25—30	14,276	16,784	15,462	13,616	11,825	10,294
30—35	17,478	21,337	19,640	16,270	14,046	11,662
35—40	19,727	24,715	22,208	17,811	14,727	12,042
40—50	20,884	27,363	23,992	19,017	15,045	12,135
50—60	19,140	28,032	22,933	18,712	14,683	12,077
60 and over	13,263	17,892	20,709	15,850	12,923	10,614

Source: The Ministry of Labor, *Survey of Wages for 1954.*

Chart 4 *Wage Distribution by Establishment Scale and Workers' Age in Manufacturing Industry*



suppressed to a lower level by the existing competition among the workers who accept work at lower rates in this situation.

In theory, it is not easy to give a full explanation of the competitive relationship between workers of larger-scale enterprises and smaller-scale ones. However, as is illustrated by Table 5 and Chart 4, the wage differentials between larger-scale and smaller-scale establishments according to the age difference of workers is well worth noting. For low-age workers the differential is very slight, while for middle-age workers, the differential is very wide, and this is mainly responsible for the average differential between larger-scale and smaller-scale establishments.

In connection with this fact, I am inclined to point out that there is a sort of imperfect competition as far as the movement of labor between α and β is concerned, and that this becomes greater as the workers get older. However, as a whole, the very existence of low wages in smaller firms can act so as to make lower the wage level of larger firms.

Thus, within the capitalistic enterprise sector as a whole, we have three kinds of differentials—productivity, wage rate and profit rate. Referring again to Chart 4 above, let us turn our attention to the point M_1 on the horizontal axis. At this border point, the profit per worker (which is denoted by $A_1 W_1$ in the chart) is just enough to maintain the concern, as the amount of profit will be almost equal to the ordinary level of wage earnings of workers. In other words, this marginal enterpriser is in a competitive situation with workers in the sense that if the wage level rises relative to his profit, he will be ready to become a hired worker himself and such a marginal enterprise will disappear.

As mentioned above, in the Japanese economy the number of workers hired by the capitalistic enterprise sector is only about 40 per cent of the total labor force, so that the importance of the sector of family enterprise is very great. Now, we move to the consideration of this sector, which is mainly composed of agricultural and, to some extent, service industries. In this sector, each independent small proprietor is working as a manager as well as a worker and depends on his own family labor force. Generally speaking, the marginal productivity of labor in this sector must be lower than that of the capitalistic sector because if it were not lower such persons would not remain in a state of self-employment. However, they will get all the net product other than rent and interest paid to outsiders, so that if we assume for the sake of simplicity that they own all capital as well as land required to carry on their enterprise, it turns out that average productivity of labor instead of marginal productivity is the income indicator.

Though we have little data on the tertiary sector, much empirical study has been done on the agricultural sector with regard to the matters relevant to this problem. A wide range of differentials for average productivity is observable in agriculture in terms of cultivated area of land, almost corresponding to the differentials already discussed in terms of the income classification in Table 4. Again for the sake of simplicity, if we neglect the small amount of capital, which also differs according to the land scale, it may be assumed that the labor productivity differential is mainly determined by land scale in the case of cultivated land of homogeneous quality. In reality, this means that the inability to enlarge the land is primarily responsible for this productivity differential.

Next we should examine the border point M_2 on the scale line in Chart 3, assuming that this scale line is also applicable to the land-scale differentials. If we assume the so-called marginal labor productivity concept to be considered in terms of a man-year unit, at the border point, M_2, we would presumably find a worker with almost no capital, and with average productivity theoretically equal to marginal productivity at a level which is a minimum in a sense that if, at this point, another laborer engages in production, his product will be lower than the income required to keep the level determined by the continuous differential line of wage or minimum income.

The definition of so-called under-employment or disguised unemployment in agriculture is a controversial issue. Some insist that in such a case the marginal productivity of labor must be zero, while others assert that it should be positive. However, the problem of a zero or positive marginal productivity is not the crux of the issue. It may be admitted that in a very theoretical setting it might be possible to define the conditions under which marginal productivity of labor is zero. This might be done if we assume a certain institutional framework of self-employed farmers who are maximizing their total net product under certain assumed conditions.

However, if we take, for example, a man-year unit instead of a man-hour or man-day unit, the whole picture changes, because the marginal worker must produce at least enough to maintain his minimum standard of living. Hence his productivity over a year period, must be positive.

The most common way of defining so-called disguised unemployment is employment characterized by an unusually low level of marginal productivity and this definition has generally been applied to the conditions of the farming population in most Asian countries. This is a mistake. The main reason why it is a mistake is that it stems from too much generalization from Western experience to Asian situations. In a country like Japan, where capitalistic enterprises have emerged and developed from traditional ways of production and living, it is a basic rule that there always exists a gap between the marginal productivity of labor in modern industry and that of the traditional pattern of self-employment enterprises.

Again let us observe Chart 3. The zone between M_1 and M_2 represents the sector of self-employment enterprises, so that the point M_1 is also the border line between the sectors of capitalistic and self-employment enterprise.

The controversial issue concerning the conditions determining labor mobility between these sectors will not be discussed here in detail. It will suffice to say simply that, in a static situation, the wage differentials in the capitalistic sector will correspond to the differentials of family *mixed* income in the self-employment sector as a whole, to the extent that the new labor force coming from the lower income families (the source of the smaller enterpriser's labor supply) has a lower labor supply price.

IV. *Conclusion*

In brief, such a situation as a whole may be called a *differential* employment structure. The main causes for this particular structure are two: 1) the inequality of capital distribution among individual enterprises, and 2) the peculiar pattern of supply curves of labor, which are not uniform among various groups of workers. I quite agree with the assertion that the level of the wage rate in relation to productivity will be determined by the relationship between the rate of capital accumulation and the rate of increase of labor supply. It is to be noted, however, that in an economy where the supply of labor as a whole is apt to exceed the demand which comes from the development of the capitalistic sector and where the man-land ratio is unfavorable to man as is the case in Japan the differential employment structure will be an inevitable result because of the two reasons mentioned above.

Much has been said on the problems of structural unemployment as against Keynesian unemployment due to a shortage of effective demand, disguised unemployment, under-employment in agriculture and the like. Recently, in relation to the development of theoretical and empirical approaches to the economic conditions in underdeveloped countries, studies on these problems have developed rapidly. However, once we recognize that the *differential* employment structure, as distinguished from the fairly homogeneous structure of employment in Western economies, is the most basic feature of the Japanese economy, almost all discussions on the problems mentioned above become meaningless.

By this, I mean that the productivity of labor engaged in various industries (even within the same industry) including family enterprises shows a wide range of continuous differentials, and that the wage rates or incomes of working people accordingly also have wide continuous differentials. As seen from the experience of the Japanese economy, these differentials may be said to be a structural characteristic rather than a temporary condition, since the situation has not changed over a long period. Hence, it is difficult to analyse such phenonema in terms of orthodox equilibrium theory, because the general pattern of labor supply permits employment at remarkably different wage levels, and thus makes the proportion of unemployed much less than in advanced economies.

Actually, in Japan, according to the official statistics of the labor force, the percentage of unemployment is only around 1.5 per cent even in recession periods, and I think this is mostly unemployment of a frictional nature. But most scholars consider that this is due to the existence of considerable disguised unemployment. In fact, according to several surveys, the number of the so-called disguised unemployed was estimated to be 2 to 8 million, depending upon different criteria of measurement. It is not necessary to enter into the technical problem of measurement here. The only point to which I would like to call attention is the inevitable arbitrariness or multiplicity of the measurements of disguised unemployment due to the very nature of the economy. For example, if we take up a representative definition of disguised unemployment according to which the marginal productivity of labor is lower than that of normal employment, we are quite puzzled to find that there is no normal level of labor productivity with which the so-called lower productivity of labor can be compared. In other words, in an economy like Japan's, the existence of differentials of productivity and wages is not a peculiar phenomenon due to particular conditions of employment or unemployment, but it is a universal phenomenon which has always existed throughout the whole economy and various kinds of occupations.

Therefore, from the policy point of view, the problem should be discussed not from the standpoint of decreasing disguised *unemployment*, but from the standpoint of improving the differential *employment* structure by narrowing down the range of differentials of productivity and income.

INVENTORY CYCLES IN POST-WAR JAPAN

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The purpose of this article is to clarify the position of inventory fluctuations in Japan's post-war business cycles. I shall, firstly, focus upon the lagged relation between financial loans and inventory investment and, secondly, emphasize the close bearing of the latter with cyclical changes of the propensity to import. I feel that it is very important to study this problem for the inventory cycle in Japan has so far exhibited interesting characteristics. For example, Japan's inventory investment-GNP ratio was, on average, 6.2% for the period 1951–56, whereas the corresponding ratios were 1.0% in the United States, 1.6% in the United Kingdom and 2.5% in the West Germany. The Japanese ratio surpasses that of any other country.[1] This leads us to suspect that the Japanese inventory-GNP ratio may also have been higher. Given equal rates of growth, a high (low) inventory investment-GNP ratio can be derived from a high (low) inventory-GNP ratio by the acceleration principle. In addition, Japan's relatively high rate of growth has raised her high inventory investment-GNP ratio. I feel therefore that the role of inventory fluctuations in economic changes have been much more important in Japan than in other countries. This is one outstanding feature of Japanese business cycle picture. We can indicate other points too, but extensive analyses involving the latter are not relevant to this paper. Let us concentrate our attention upon two important inventory problems, i.e., the relation between financial loans and inventory investment, and the relation between inventory investment and the propensity to import.

I. *Financial Loans and Inventory Investment*

In Japan operating funds of business firms are financed extensively by financial institutions. The more developed a country is, the less her dependence upon financial institutions is, for in more developed economies a high capital accumulation might enable firms to finance even their short-term funds from their internal accumulation. In Japan the reverse situation prevails. Therefore, it might be expected that the movement of inventory investment has a close connection with the incremental change of outstanding financial loans.

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[1] Why is Japanese inventory-GNP ratio higher than in other countries? Those economies in which there is a relatively high growth potential should have higher inventory / GNP ratios. Under such conditions, business firms would carry more inventories. Second reason may lie in the fact that the Japanese dependence on raw materials from foreign countries leads her to hold a relatively higher inventory ratio. The relatively higher inventory-sales ratio can be demonstrated also from international comparisons of combined firms' balance sheets.

Our problem is to find how changes in financial loans are interrelated with changes in inventory investment. As quarterly time-series of financial loans, we can use the increments of outstanding loans, either in relation to the loan accounts of *all financial institutions* (except Bank of Japan) or to the *operating loan* accounts of *all banks* (which excludes Bank of Japan, various financial institutions for small business, agriculture, forestry and fishery, securities finance corporations, government financial institutions, Trust Fund Bureau, and insurance companies). As regards inventory investment of all industry, we have computed quarterly series of corporate inventoy investment from the Ministry of Finance data, "Hojin Kigyo Tokei" (Corporate Enterprise Survey), since we cannot get satisfactory quarterly series of inventory investment from national income statistics. Moveover, the inventory investment series of national income statistics in Japan are not adjusted with respect to price changes, i.e., they are unadjusted as to inventory valuation changes. This is why we have used an independent estimate from national income statistics, athough the scope of inventory investment is limited to the corporate enterprise sector.

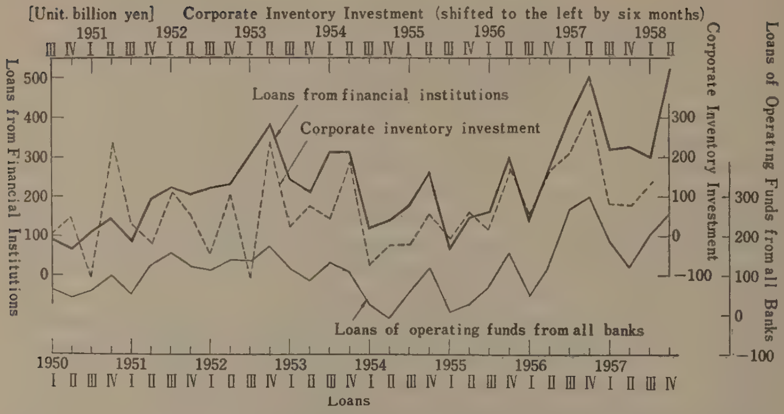
Table 1 *Financial Loans and Inventory Investment*

(Unit: billion yen)

		Corporate Inventory Investment of All Industry	Increments in Outstanding Loans of Financial Institutions	Increments of Outstanding Loans of Operating Funds of All Banks
1950	I		93.3	58.2
	II	15.9	69.5	41.3
	III	5.8	110.4	58.2
	IV	42.5	141.6	98.9
1951	I	-106.7	88.0	50.4
	II	241.1	193.7	122.7
	III	32.3	217.5	157.3
	IV	-21.3	204.9	119.7
1952	I	110.2	220.3	109.0
	II	50.1	236.5	136.5
	III	-47.1	304.8	134.5
	IV	106.5	382.2	176.8
1953	I	-109.2	245.0	116.2
	II	228.9	211.9	84.7
	III	23.7	312.3	132.3
	IV	75.1	310.2	109.3
1954	I	44.1	121.4	23.6
	II	188.0	140.0	-8.0
	III	-72.6	177.8	59.8
	IV	-24.6	256.9	117.9
1955	I	-19.1	71.6	8.5
	II	59.6	148.1	22.3
	III	-12.6	162.2	72.0
	IV	61.4	296.1	156.9
1956	I	18.2	145.0	44.2
	II	173.3	275.4	114.3
	III	52.7	404.1	267.7
	IV	168.8	503.3	298.6
1957	I	208.1	319.1	180.1
	II	315.3	326.0	119.3
	III	83.0	300.2	204.9
	IV	78.0	522.5	256.1
1958	I	128.6	235.4	86.3

In Table 1, we can see the basic data which are necessary for our analysis. Chart 1 depicts the lagged covariation of financial loans and inventory investment for the period 1953–57. However, before 1952, there exists no clear correlation between them. One of the reasons is that the further we go back before 1952, the more the "Corporate Enterprise Survey" may decrease in reliability. Another reason is that during the three years at the middle of which the Korean boom occurred, the ups and downs of business fluctuations were violent, and the speculative factor appears to

Chart 1 *Loans and Inventory Investment*



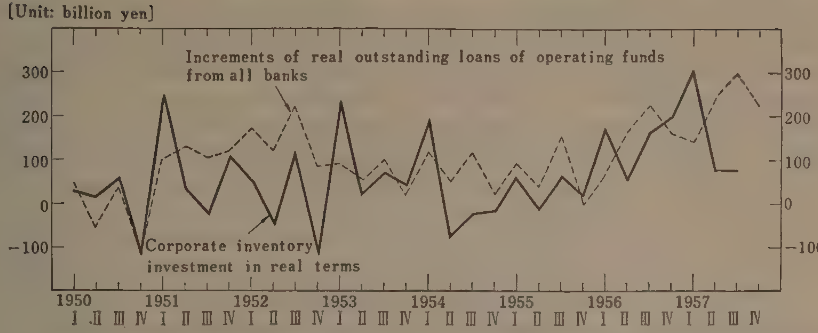
have been dominant. Furthermore, fluctuations in the special procurement demand from the U.S. Military might have disturbed systematic covariation of the two series. Anyway, the lagged covariation of loans and inventory investment is very clear from 1953 onward, whether we take the statistics of loans of all financial institutions (except Bank of Japan) or loans of operating funds of all banks. The result obtained is that as far as the period 1953–57 is concerned bank loans lead inventory investment by six months. If this correlation is reliable it will be a very useful tool for our economic policy, for then it will be apparent that a tight-money policy will not take effect fully for six months. We need not worry about the ineffectiveness of the policy before six months elapse.

The above is a tentative empirical finding. This is true in the main but should probably be amended in some respects. My finding has undergone severe criticisms which appear to be fatal in the eyes of casual readers. Let us mention them:

1) My finding presumes that loans go ahead of inventory investment, i.e., the precedence of funds over commodity transactions. However, inventory investment is financed by short-term operating funds which are mainly supplied by discounting commercial bills. If it were true, inventory investment should go ahead of bank loans. My result does, therefore, involve something wrong from the point of view of the "banking principle." According to the "banking principle," commodity transactions are a *cause* and not an *effect* of monetary circulations.

2) My statistical analysis has started from *nominal* increments of outstanding loans. However, a critic starts from increments of *real* outstanding loans and presents a chart showing a *simultaneous* movement between real loans and real inventory investment (Chart 2).

Chart 2 *Δ(L/P) and Inventory Investment*



In this case, denoting outstanding loans by L, we start from ΔL and a critic starts from Δ(L/P) where P is the wholesale price index. This criticism can be a statistical reinforcement to the theoretical criticism in (1) above. If loans and inventory investment are simultaneously convariant, the precedence of loans over inventory investment can be statistically denied. However, as seen in Chart 2, Δ(L/P) and inventory investment do not show any simultaneous movement since 1956.

3). The third criticism is more important and seems to be more fatal to my finding. Every year, loans will seasonally increase between October and December, and every year inventory investment will seasonally rise between April and June. In Japan, manufacturers concentrate imports of raw materials between April and June. Therefore, my finding may be a *spurious* correlation between two independent seasonal variations.

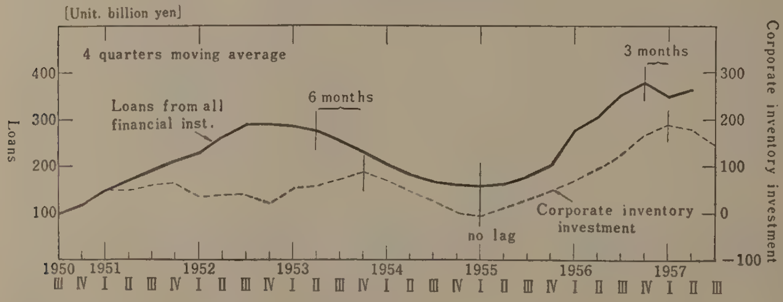
My answers to the above criticisms are as follows:

1). Although the critic supposes that the whole of operating funds is financed by discounting commercial bills, the percentage share of operating funds (all banks) financed by discounting bills is only 35% between 1950–58 in Japan. Further, fixed investment was relatively rigid in the post-war recessions of the Japanese economy partly owing to the buffer of high ratio of outstanding orders for machinery to its delivery which was in turn made feasible by the high growth potential of the Japanese economy. Therefore, a tight money policy cannot always suppress equipment funds, the demand for which is very intense even in recessions. If this is supposed to be inevitable, and if the tightening of short-term operating funds were supposed to be impossible because they are results rather than causes of changes in inventories, then the so-called tight money policy cannot be enforced. However, the White Paper of 1958 emphasized that a tight money policy was the sole master in the first phase of the recession in 1957. If the description of the White Paper is true, we cannot but arrive at a conclusion that the critic's opinion is too strict in rejecting the initiative of financial institutions. Actually the initiative of "finance" is more effective and active especially at the upper turning point of fluctuations.

2) We cannot accept the second statistical criticism. The critic starts from the increments of *real* outstanding loans, i.e., from $\Delta(L/P)$. $\Delta(L/P)$ will continue to rise even in the earlier phase of the recession initiated by a tight money policy, owing to a decline of prices P brought about by the decrease of ΔL. Therefore $\Delta(L/P)$ already involves a *result* of a tight money policy—a decline of prices. $-\Delta P$ is a result of $-\Delta L$, and it is a misleading procedure for us to start from $\Delta(L/P)$, for it is not a starting point. We should thus compare ΔL rather than $\Delta(L/P)$ with changes in inventories.

3) The third criticism which decries my finding as an accidental lagged correlation between two independent seasonal variations is most important. However, from Chart 1, we feel that even if seasonal variations are removed from two series respectively the conclusion on the lagged correlation between them will not break down. Further, if there exists some causal connection between two seasonal variations, it is not good to remove them away from original data, especially when the patterns of two seasonal fluctuations are different. We cannot completely assume this possibility away from our two series, when two seasonal variations are not independent.

Chart 3 *Lags When Smoothed Out by the Moving Average*



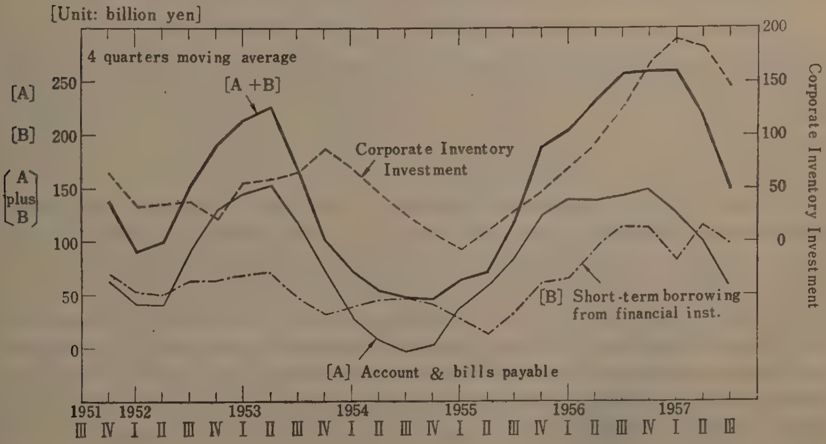
Be that as it may, it is interesting to look for consequences when seasonal fluctuations are removed. There are a few methods of eliminating seasonal changes, but each method has its own defects. Seasonal pattern may not be invariant in various phases of the business cycle, and it may change gradually as time elapses. We have tried the simplest way of eliminating seasonal fluctuation, i.e., 4 quarters moving average. Chart 3 depicts two series smoothed out by moving average.

In this Chart, we see clearly a six-month or longer lag of inventory investment over financial loans in the 1953–54 recession. But only a three-month lag in the 1957 recession. By eliminating seasonal fluctuations, we have lost the regularity of lags. However, it was confirmed that financial loans always go ahead of inventory investment by three or six months and not the reverse. We see another important new phenomenon in that changes of the two series coincide in the upturn of 1954–55 without time lag. If we could accept this, our conclusion would be that in the downturn caused by a tight money policy there arise lags of inventory investment by six or three months, but in the upturn there occurs no lagged variation. This seems to suggest that, although a tight money policy entails a lagged downturn of inventory investment, firms will begin to purchase raw materials and stockpile, when their business outlook becomes favorable, by drawing bills and without requiring any borrowing from banks. In other words, there is an asymmetry between the downturn and the upturn in the mode of inventory changes. In the downturn of 1953–54 or 1957, bank loans were a cause and, in the upturn of 1954–55, they were an effect. This is a *tentative* conclusion with the reservation that a method of eliminating seasonal fluctuation was correct. However, we may get different conclusions if we employ different methods.

We used financial loans data from financial statistics. We can also use corresponding data from "Corporate Enterprise Survey" (combined corporate business statemants). However, operating loans in financial statistics are not in the same definition as the short-term borrowing from financial institutions in "Corporate Enterprise Survey." Although the former includes the amounts of bills discounted, the latter excludes it, because business firms get money only by crossing out the account of "bills receivable" when they discount bills they hold. Borrowing by discounting bills does not emerge as borrowing in the firm's balance sheet. We take up two series from *Corporate Enterprise Survey*, "account and bills payable" and "borrowings from financial institutions." One relates to the inter-firm credit and another relates to the financial credit. By applying four quarters moving average, we can depict the leads or lags of these series in relation to the movement of inventory investment (Chart 4).

In Chart 4, we see three series to be compared with inventory investment,

Chart 4 , *Borrowing, Account & Bills Payable and Corporate Inventory Investment*



—"account payable (incl. bills payable)," "short-term borrowing from financial institutions," and sum of the two ("total credit"). In this Chart, we find once again the lag of inventory investment and the lead of the other three series. Total credit (sum of account payable and short-term borrowing) leads by six months in the 1953–54 recession and by several months in the 1957 recession. In the 1957 recession it is difficult to ascertain the upper turning point of total credit, for from 1956 III to 1957 I the levels of total credit are almost constant. We may say the turning point is 1956 III or 1956 IV or 1957 I. If we lay emphasis upon the initial impact of the tight money policy, we should take 1956 III. Then the six-month lag can be said to exist both in 1953–54 recession and 1957 recession. If we look at the short-term borrowing, the six-month lag still prevails. However, we see an interesting phenomenon,—the revivals of short-term borrowing at the midst of the two recessions. This may be called the "inventory financing" in the depression. There is another point to be carefully noted that "account payable (incl. bills payable)" oscillates more violently than "short-term borrowing." We recognize its clear six month lead in 1953–54 recession and its three month lead in the 1957 recession. Strange to say, even at the bottom of 1954 recession, the inter-firm credit precedes inventory investment by six months.

There remains much to be explored and re-examined. My original tentative finding underwent a few critisisms. Although the accuracy of the period of lag was blurred a little, I feel confident that the substance of my empirical hypothesis still survives. Of course it should be re-examined by industries, and checked by different statistical data. Our analysis is still good-in process, but it has made clear some aspects of the cause and effect of a tight money policy.

II. *Inventory Changes and the Propensity to Import*

According to the Keynesian tradition, several economists attempted to compute the linear import functions in Japan, but a casual look at the basic data makes me hesitate to follow this routine. Let me depict a simple graph which correlates the index of the volume of imports of raw materials with that of the volume of industrial production (Chart 5).

As can be seen from Chart 5, we may fit a linear relation between imports of raw materials and industrial production. For the period 1950–1957 (1950= yearly and 1951–57=quarterly data), we get the following relation.

$$M_t = -16.45 + 1.2017 O_t\ ;\quad R^2 = 0.8645 \cdots\cdots\cdots\cdots\cdots\cdots (1)$$

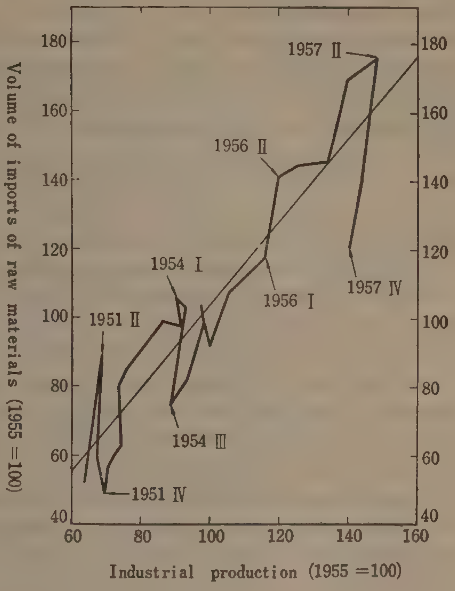
The correlation arrived at is very good, but the relation cannot be projected to the phases of boom or depression. The deviations from the straight line fitted by the least square method are not random. They reflect very exactly the process of business cycle, i.e., in booms the deviations scatter to above the line and in depressions the reverse prevails. For the years, 1951 (Korean boom), 1953 and

1956–57, the deviations scatter upwards, and for the years, 1952, 1954 and 1957, they scatter downwards. Therefore, a glance at the chart suggests that some cyclical factor should be introduced in the import function together with the level of production. We find an asymmetry of changes in the propensity to import in booms and depressions. The import of raw materials in a boom are greater than those in a depression even under the same level of industrial production.

Various equations can be fitted to the various phases of business fluctuations. Import function in the upswing (1954 III–1957 II):

$$M_t = -68.60 + 1.6689 O_t \; ; \quad R^2 = 0.9635 \cdots\cdots\cdots\cdots\cdots (2)$$

Chart 5 *Imports of Raw Materials and Industrial Production*



Import function connecting booms (1951 II, 1952 IV, 1953, 1954 I, II, 1956, 1957I, II);

$$M_t = -2.46 + 1.1787 O_t \; ; \quad R^2 = 0.8223 \cdots\cdots\cdots\cdots\cdots (3)$$

Import function connecting depressions (1951 III, IV, 1952 I, II, III, 1954 III, IV, 1955 I, 1957 III, IV):

$$M_t = -14.58 + 1.0375 O_t \; ; \quad R^2 = 0.9220 \cdots\cdots\cdots\cdots\cdots (4)$$

Regression coefficients computed in relation to equations (3) and (4) are close to the regression coefficient of (1) and around unity. However, the regression coefficient in the upswing import function (2) is much higher than these, i.e., 1.6689. This constant cannot be used for the future projection in a sense of long-run as well as short-run predictions. The relation biased with the boom period cannot be extrapolated to the long-run normal relation. It also cannot be extrapolated to the coming period of depression, because in depressions we see a sudden cyclical decline in the propensity to import. Nevertheless, the White Paper of 1957 expressed an opinion that a rise in the propensity to import in 1956 has a semi-long-run structural tendency. This point of view was changed in face of the sharp decline in the propensity to import in the 1957–58 recession in the White Paper of 1958.

Thus, some cyclical factor should be injected in the import function. We have attempted to construct an equation taking account of this. Denoting corporate inventory investment by V_t and the rate of increase in industrial production compared with the same quarter of the preceding year by O_t/O_{t-4}, we get,

$$M_t = -98.34 + 1.03910 O_t + 0.01004 V_t + 0.77887\ (O_t/O_{t-4})\ ;\quad R^2 = 0.9485 \cdots\cdots\cdots\cdots (5)$$

Readers may be aware of an improvement of the coefficient of determination R^2 from 0.8645 (in the simple linear one variable equation) to 0.9485. This means a considerable part of the systematic deviation from equation (1) can be explained by the additional variables V_t and O_t/O_{t-4}. The cyclical nature of variations of the propensity to import is now made clear.

Cyclicality of the import ratio depends in part upon fluctuations in the requirements of raw materials per unit of industrial production. It is the changes in imported raw materials *consumed* divided by industrial production. Another important factor is the changes in imported inventories. The importance of the latter can be illustrated by a simple numerical example. Assuming that the normal inventory ratio is 30% as compared with current production and the unit raw material requirement is constant (20%), the following example can be constructed:

Table 2

Period	Production	Inventories of imported raw materials	Imported raw materials proportionate to production	Total imports of raw materials
1	100	30	20 (100)	20 (100)
2	110	33 (+3)	22 (110)	25 (125)
3	125	38 (+5)	25 (125)	30 (150)
4	142	43 (+5)	28 (142)	33 (165)
5	142	43 (0)	28 (142)	28 (142)
6	130	39 (−4)	26 (130)	22 (110)

Total imports of raw materials consist of two parts; one part is proportional to industrial production (20%), and another part is induced by assumed entrepreneurial behavior—the maintenance of normal inventory ratio 30%, and expressed by the increments of inventories. The result obtained indicates more violent fluctuations in imports of raw materials than in industrial production. Thus a mere halt in the rise of production (142→142) entails a decline in imports of raw materials (33→28). A decline of production from 142 to 130 (8.45% decrease) causes a drastic decline in imports (28→22). This means a 21.43% decline. The production of 110 in the boom corresponds to raw materials imports of 25, while the production of 130 in recession corresponds to the low level of imports of 22. The import ratio is 22.7% versus 16.9%. This application of the acceleration principle thus explains why imports and the import ratio decrease sharply in depression while production is constant or falls slighly. The above interpretation applies not only to imports of crude raw materials (cotton, iron ore etc.), but also to imports of semi-finished raw materials, such as steel. Moreover, even finished products may be under the rule of this empirical law, in so far as they are imported as stocks of foreign trade merchants.

In the above analysis, we assumed a constancy in the ratio between imported raw materials consumed and industrial production. However, such an assumption is not realistic. It may change as time elapses. Therefore, it is necessary to introduce another device by which we can throw light upon the problem of inventories and imports.

Our device is very simple, but very useful. Denoting imported crude raw materials consumed by M_c, the volume of imports of crude raw materials by M, and industrial production by O, we get the following identity.

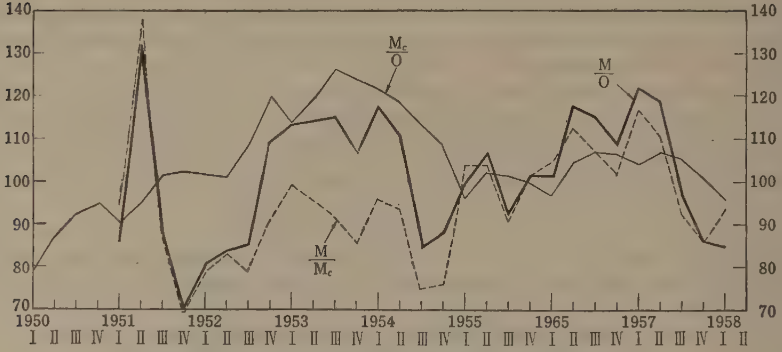
$$\frac{M}{O}=\frac{M_c}{O}\cdot\frac{M}{M_c}\cdots\cdots\cdots\cdots\cdots\cdots(6)$$

M/O is the import ratio or the propensity to import in physical terms in manufacturing industry. M_c/O is the unit crude raw material requirement or the ratio of imported crude raw materials consumed and industrial production. M/M_c is a barometer representing the variations in inventories of imported crude raw materials, since the difference between M and M_c is the inventory investment in relation to imported crude raw materials. By constructing this identity, we can evaluate the relative variations of M_c/O and M/M_c in explaining the changes of M/O. Although equation (6) is an identity, we can assume decidedly that M_c/O and M/M_c are independent variables and M/O is a dependent variable.

In Japan we have recently had the so-called "inventory controversy" especially between Mr. Osamu Shimomura and Mr. Yonosuke Goto. Both are famous and able government economists, and the latter has long been a contributor to the White Paper published by the Economic Planning Board. Heated controversy culminated in the estimation of accumulated inventories of imported crude raw materials during fiscal year 1956. Shimomura estimated it 500–600 million dollars, while Goto estimated it at less than 200 million dollars. An intermediate estimate by the Ministry of Finance was about 300 million dollars. Anyway, Shimomura's emphasis was laid upon the role of inventory accumulation in bringing about the balance-of-payments difficulty in fiscal year 1956. In this sense, the increasing imports in 1956 were of cyclical nature, and could be overcome without a strong tight money policy in his opinion. On the contrary, Goto's judgment was that the rising import ratio from 1956 on was of semi-structural character, and a tight money policy to prevent an acceleration of this tendency was inevitable. Setting aside the urgency of a tight money policy, the developments afterwards have demonstrated clearly the cyclical, not structural, nature of the rising import ratio in 1956.

The writer wrote an essay criticizing Goto's (and consequently the White Paper's) arguments just after the publication of the 1957 White Paper and as-

Chart 6 *Industrial Production, Imports, Inventory Changes and Unit Mc requirement*



M/O=imports of crude raw materials divided by industrial production
M_c/O=imported crude raw materials consumed divided by industrial production
M/Mc=imports of crude raw materials divided by industrial consumption of them

serting the cyclicality of the import ratio. Then does our standpoint agree with Shimomura's? Not necessarily so. His estimation of 600 million dollars as accumulated imported raw materials should be re-examined carefully and I have many doubts about the procedure of his estimation. However, we cannot go into a detailed discussion of it here. Instead, one simple graph is presented in order to make clear the role of inventory accumulation in changes of the import ratio. This is shown in Chart 6, and actual figures are put in equation (6), using the Ministry of International Trade and Industry's data. Goto arrived at a conclusion which treated lightly the role of inventory accumulation from the above data, but it is interesting that we have reached the opposite conclusion which emphasizes the role of inventory accumulation from the same data.

Chart 6 shows that the correlation between M_c/O and M/O is very slight, while the relation between M/O and M/M_c is extremely close. The covariation between M/O and M/M_c reflects the importance of inventory accumulation (or decumulation) due to imported raw materials in relation to the oscillation of the import ratio (M/O).

Between 1951 and 1957, we get the following relations:

$$M/O=43.873+0.5415\ (M_c/O)\quad R^2=0.1116\ (R=0.3341)\cdots\cdots(7)$$
$$M/O=20.714+0.8532\ (M/M_c)\quad R^2=0.6820\ (R=0.8259)\ldots\ldots(8)$$

These indicate how close the relation is between M/O and M/M_c and how slight a relation exists between M/O and M_c/O. The two conflicting points of view in the "inventory controversy" attach greater importance to either M/M_c or M_c/O. Shimomura regards M/M_c as decidedly important and Goto regards M_c/O as decidedly important. I think our simple analysis throws some light upon the controversy. The tool used here is merely a tautological identity, but it is extremely ironical that sometimes one is unaware of the "unnoticed tautology," being inovolved in an unnecessary confusion.

The period 1951–57 is too long. "Inventory controversy" took up a shorter period, so if we restrict our analysis to the period 1955–57, then we get the following relations:

$$M/O=-62.095+1.6318\ (M_c/O)\ ;\quad R^2=0.3238\ (R=0.5690)\ldots\ (9)$$

$$M/O=-11.328+1.1390\ (M/M_c);\quad R^2=0.8774\ (R=0.9367)\ldots\ (10)$$

The shorter the period of observation, the greater the role of inventory accumulation becomes. On the one hand, in the 1956 boom, the ratio between imported crude raw materials consumed and industrial production was almost invariant. On the other hand, the close covariation between inventory accumulation and the import ratio was remarkable. Goto's hypothesis applies to 1953 rather than 1956, for up to 1953 M_c/O follows a rising trend. Along with many other factors, we can point out the fact that up to 1953 the imports of cotton and other natural textile raw materials increased, but from 1953 on the production of synthetic textiles exhibits a drastic increase which caused a relative decline in the unit imported raw material requirement in relation to the textile industry.

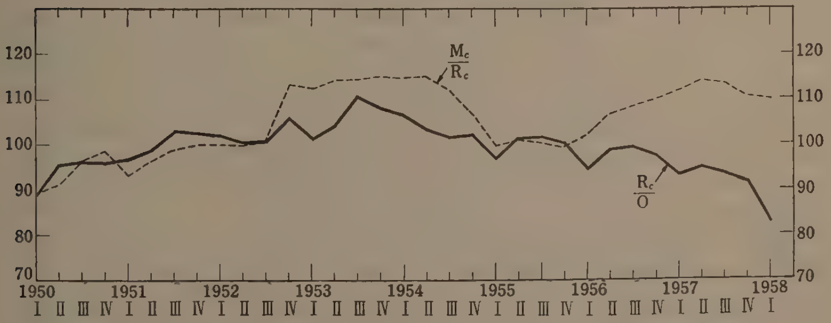
The unit imported crude raw material requirement M_c/O can be further decomposed as follows:

$$\frac{M_c}{O}=\frac{M_c}{R_c}\cdot\frac{R_c}{O}\cdots\cdots\cdots\cdots\cdots\cdots(11)$$

where R_c stands for *total* crude raw materials consumed.

Again, we can depict the movements of the two components (Chart 7).

Chart 7 *Movements of Mc/Rc and Rc/O*



Mc/Rc=Imported crude raw materials consumed divided by total crude raw materials consumed
Rc/O=Total crude raw materials consumed divided by industrial prodution

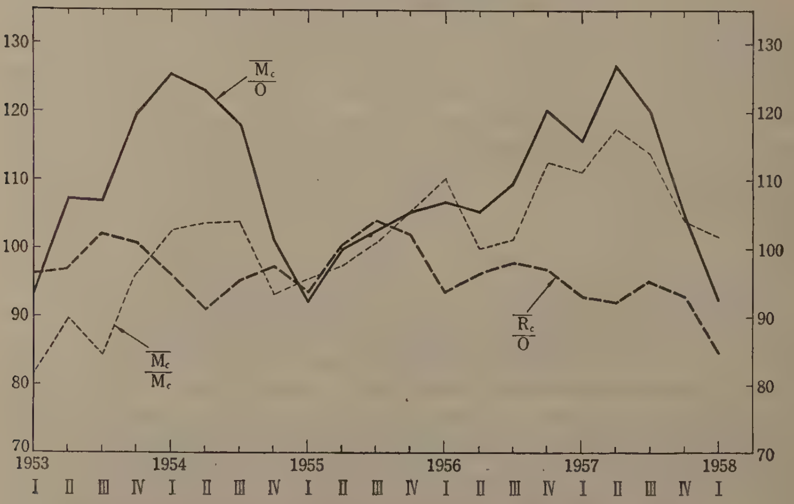
Chart 7 indicates that the movement of M_c/R_c is fairly cyclical, but that of R_c/O is not so. Except for seasonal fluctuations, R_c/O rises up to 1953, and declines after 1953. Why R_c/O shows seasonal drops in the 1 quarter (January to March) between 1955 and 1957 is clear. After 1955, the index of industrial production was revised and the production of food and kindred products was included. However the latter shows a drastic increase between January and March, (e.g., in 1957 its production index was 100.5 in January, 164.9 in February, 202.1 in March and 99.8 in April). The sudden seasonal increase in food production in this quarter raises the index of industrial production in the same quarter of every year, so it decreased seasonally R_c/O.

From 1955 onwards, R_c/O shows a declining trend, but M_c/R_c follows a cyclical upswing. The reason why M_c/O was fairly constant in this period is that the cyclical upswing of M_c/R_c was cancelled by the down trend of R_c/O. The cyclicality of M_c/R_c can be easily understood, for imports of crude raw materials are, so to say, the marginal supplies, as compared with the supplies from the domestic sector.

So far we have taken up the crude raw materials only. However, we should not neglect the semi-finished raw materials, like steel, chemical intermediate products, etc. We can compute the ratio of semi-finished raw materials consumed to industrial production $\overline{R}_c/O$, the ratio of *imported* semi-finished raw materials consumed to industrial production $\overline{M}_c/O$, and the ratio of *imported* semi-finished raw materials consumed to the *imported* crude raw materials consumed $(\overline{M}_c/M_c)$. The movements of these ratio are seen in Chart 8.

The amount of imports of semi-finished raw materials is relatively small as compared with crude raw materials, but it is important to observe this behavior. Although $\overline{R}_c/O$ does not show any marked trend, $\overline{M}_c/O$ shows a conspicuous cycle the amplitude of which is greater than that of M_c/O.

Chart 8 *Movements of* $\frac{\overline{Mc}}{O}$ $\frac{\overline{Mc}}{Mc}$ *and* $\frac{\overline{Rc}}{O}$



$\overline{M}c$ and $\overline{R}c$ relate to semi-finished raw materials, and Mc ralates to crude raw materials.

On the other hand, $\overline{M}_c/M_c$ trends upwards. In the "inventory controversy", the argument has centered around the fluctuations in imports of crude raw materials only, but as $\overline{M}_c/M_c$ is growing steadily and the amplitude of $\overline{M}_c/O$ is greater than M_c/O, it will be more urgent to take up semi-finished raw materials into our analysis. However, we must postpone this to our future studies.

III. *Conclusions*

The above is an analysis of the post-war Japanese inventory cycles. It treats only a few aspects of these cycles but we obtain some conclusion from our analysis:

1) As Japanese business firms depends upon supplies from finanical institutions for their operating funds, there can be seen a close causal connection between financial loans and their inventory investment. When the basic data were used without eliminating seasonal fluctuations, financial loans lead always by six months. However, even if seasonal change is eliminated, the hypothesis of lead of loans over inventory investment does not collapse, although the length of lag becomes less accurate, six or three months. This may be a useful relation in judging the consequences of a tight money policy.

2) The violent cyclicality of the propensity to import (or the import ratio) urges us to introduce some cyclical factors into the import function. A simple Keynesian import function will not be a useful tool in our forecasting. Even under the same level of output, the imports of raw materials will be systematically larger in a boom than in a depression. The introduction as additional variables of inventory invenstment and the rate of increase of production as compared with the same quarter of the preceding year is recommended.

3) In order to throw some light upon the confused state of the so-called "inventory controversy" in Japan, we have derived a simple solution. It makes clear that in the post-war economy the changes in inventories of imported raw materials were a much more important factor in bringing about fluctuations of the propensity to import. Some technical coefficient between imported raw materials consumed and industrial production is not very important. This does not mean that our analysis justifies the numerical validity of Shimomura's estimate on the inventory accumulation of imported raw materials amounting to 600 million dollars. With the same data by which one-side debator in the "inventory controversy" attempted to neglect the importance of inventory fluctuations, our analysis arrived at an opposite conculsion.

In the Japanese economy, whose growth potential is relatively high, and whose dependence upon the supplies of foreign raw materials is also high, the normal inventory ratio of entrepreneurs should consequently be high. This high normal inventory ratio brings about the high inventory investment-GNP ratio, on the one hand, and a violent fluctuation of the latter ratio in the business cycle.

The violent movement in the inventory investment has something to do with that of imports of raw materials. Thus, in an economy in which a high normal inventory ratio prevails, it may be dangerous to compute the short-run marginal propensity to import, if one neglects the influence of inventory fluctuations. Also it is not reasonable to extrapolate the short-run tendency of the import ratio due to the inventory accumulation as a long-run trend.

Thus, the inventory cycle is one of the most important foci in the analysis of the short-run fluctuation of the Japanese economy. Volatile ups and downs in inventory investment in the business cycle are a background for the basic instability of the Japanese business cycle. At the same time, the same phenomenon has suppressed the apparent balance-of-payments ceiling in expansion phases. The business cycle and the balance-of-payments problems may be understood apart from analyses of the inventory cycle in some other countries, but not in the Japanese economy.

CAPITAL FORMATION IN RESIDENTIAL REAL ESTATE IN JAPAN, 1887-1940

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I. *Introduction*

The aim of this paper is to analyze private residential construction as a part of a study of capital formation in Japan. A tentative estimate of such construction since 1930, has been made by the Economic Planning Board, but this estimate is problematical. In general, one of the weakest areas of Japanese statistics is the field of building construction, although, in varying degrees, a similar situation in some other countries. The construction sector is usually considered as indirect social investment and, having no direct relation to visible returns, as it differs from investment in producers' durable goods. Therefore, its role in economic growth is thought to be less important than that of the latter. Although individual landlords, from their view of profits, have regarded housing construction as capital investment, it is only recently that residential construction has been included as a component part of capital formation, the reason for inclusion having been clarified by the development of the conceptual framework of national income analysis.

One of the reasons for lack of emphasis on residential construction as a part of capital formation is the poor quality of Japanese housing. In addition, there are various statistical difficulties in estimating its value. First, residential construction has peculiar characteristics, depending upon location, so it is difficult to establish a common standard of measurement. Second, it is produced only on the order of occupants according to their particular preferences. Third, the construction industry has not sufficiently modernized its system of accounting. For example, there are many unincorporated contractors and carpenters. As a result of the above, the first comprehensive picture of this sector in Japan made available by the Ministry of Construction in a survey published in 1958.

II. *Availability of Data*

Public works in Japan has been mainly under the control of the government since the Meiji Restoration (1868), so estimates of this component of construction can be made as far back as the early Meiji period by examining government expenditures.[1] However estimation of private construction activity, especially residential construction in the period before World War II, is very difficult because of the poor quality and dispersion of available materials. For the pre-war period, building statistics exist in two series. One is "Statistics on the Basis of Work-Put-In-Place" by the Ministry of Home Affairs (1927–1944); the other is "Building Statistics" by the Ministry of Commerce and Industry (1936–1943).

Ministry of Home Affairs series comprises data collected for areas covered by the Urban Districts Building Law and is in terms of amount of floor space, not value. This makes estimation of residential construction difficult, and indicates that the government was not interested in the annual flow of construction, but in the floor space occupied per person or the total physical amount of building. In other words, residential construction was not conceived on the basis of productivity of capital or investment value, but on the basis of welfare. Statistics for residential construction originated in the severe housing problem occasioned by World War I, when the movement of labor from rural to urban areas accompanying the remarkable development of commerce and industry occured.

In this way, the increment of residential construction has been estimated on the basis of the Urban Districts Building Law since 1927.[2] Next the method of measurement and some problems of residential construction in the context of capital formation in Japan will be presented.

III. *Some Problems in Measurement*

(1) Stock and flow

Because data for increments of construction is not available for years prior to enforcement of the Urban Districts Building Law, total constructive figures must be converted to obtain the flow of construction. The following formula is used.

$$N_t = S_t - S_{t-1} + D_t + D'_t + C_t \cdots\cdots\cdots\cdots (1)$$

N_t……Net residenital construction in year t
S_t……Total residential construction in year t
D_t……Loss by fire and natural disaster in year t
D'_t……Removal in the year t
C_t……Net increment through change in use

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[1] K. Emi and H. Rosovsky, "Measurement of Government Construction in Japan" *Economic Review* (in Japanese), Hitotsubashi University Economic Research Institute, Vol. 9, No. 1, 1958.

[2] For years prior to the period covered by the Ministry of Home Affairs series, statistical, yearbooks of large cities include some building statistics, as shown on the following. These yearbooks show the total amount of construction in physical terms at the end of each year. In addition, they show kinds of construction, by materials, but not by use. Data for residential construction appears separately from 1918, in the case of Tokyo City.

Tokyo(Prefecture) from	1886
Tokyo (City)	1887
Osaka	1906
Yokohama	1903
Kobe	1909
Nagoya	1910

(2) Gross and net

To measure gross capital formation in housing, it is necessary to include not only new construction and additions and alterations to existing housing, but also repairs on housing. The latter is fairly large in value,[3] but attention will be confined, at first, to the former.

The question is what function should be formulated theoretically for new and reinvestment in housing and how to measure them correctly. From a long run point of view, new investment in housing is a function of the increment of population or number of households, assuming the number of persons per dwelling to be in constant.[4] On the other hand, reinvestment in housing is considered a function of total housing.

Using G, N and R to represent gross, new and reinvestment in housing, respectively, the following equation can be formulated.

$$\begin{aligned} G &= N+R \\ &= \alpha(\varDelta P)+\beta(S) \cdots\cdots\cdots\cdots\cdots\cdots\cdots\cdots (2) \end{aligned}$$

If N_{iu} is defined as new investment in housing in urban areas during the year i,

$$N_{iu}=\alpha_i(\varDelta P_{iu})$$

In actual estimation, data for the sample area are extended to the nation. Thus, if new investment in housing in the sample area is represented by N_{is} and unit value, or cost, of investment by m_i,

$$\alpha_i = m_i \cdot \frac{N_{is}}{\varDelta P_{is}}$$

Then,

$$N_{iu} = m_i \cdot \frac{N_{is}}{\varDelta P_{is}} \cdot \varDelta P_{iu} \cdots\cdots\cdots\cdots\cdots\cdots\cdots (3)$$

This is considered as a definitional equation. Of course, the assumption that the following relationship exists is essential to this equation.

$$\frac{N_{is}}{\varDelta P_{is}} = \frac{N_{iu}}{\varDelta P_{iu}}$$

For the period before 1926, new investment in urban housing is estimated by expanding data from a sample of the five or six largest cities to the nation.

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[3] According to a study by the Institute of Building Research, Ministry of Construction, repairs are estimated 37–38% of the total of new construction and additions and alterations to existing housing in 1956. It seems that a carpenter in Japan builds two new houses a year, receiving additional earnings from repair work. However, this ratio fluctuates with the business cycle. Reference to this point will be made again later.

[4] It is better to use number of families than population. Here population is used under the assumption that the average number of persons per family in urban areas is fairly constant for long periods. In fact, it gradually decreased from the 1890's to period before World War I, then increased somewhat.

Average number of persons per family (in the six largest cities)

period	persons per family
1888–1900	4.58
1901–1910	4.32
1911–1920	4.37
1921–1930	4.51
1931–1940	4.77

Therefore, the ratio $\frac{N_i}{\varDelta P_i}$ for these cities must be examined to determine whether it is representative.[5]

Next, reinvestment in housing is represented by $R_{iu}=\beta_i\ (S_i)$. Defining the annual replacement rate as r[6] and the value of reinvestment per *tsubo* as n, and assuming r to be nearly constant,

$$R_{iu}=r\cdot n_i(S_i)\cdots\cdots\cdots\cdots\cdots\cdots\cdots\cdots\cdots\cdots(4)$$

Combining formular (3) and (4) with (2),

$$G_{iu}=m_i\cdot\frac{N_{is}}{\varDelta P_{is}}\cdot\varDelta P_{iu}+r\cdot n_i\cdot S_i\cdots\cdots\cdots\cdots\cdots\cdots\cdots(5)$$

In conclusion,(1) and (5) are the fundamental formulae for estimating capital formation in housing for the period before 1927, when figures on "flow" are not available.

In making estimates by use of the above formlae, care must be exercised in expanding the sample to the nation as a whole. The urban area used as the sample continuously expands, so the difference between S_t and S_{t-1} in the sample city often increases sharply as the result of an extension of city limits. In such cases, the figures in the sample must be adjusted.

Other difficulties of housing construction statistics are present in the following.

(a) the distinction between residential and non-residential housing

(b) the relation between floor space and total floor space as physical unit of building construction

(c) the relation between the number of *mune* (ridge), number of houses and number of families or households

(d) the distinction between new construction, additions and alterations to existing housing, moving and repairs of varying degrees, corresponding to the concepts of gross and net investment

(e) differences in statistics as a result of collection of data at different stages of construction

Distinguishing residential from non-residential housing becomes a problem in the case of joint-use. Data gathered under the Urban Districts Building Law in the pre-war period include joint-use houses in residential housing. Tokyo City Statistics being to list joint-use house separately from 1936. Even in post-war statistics, the joint-use house was treated as residential housing till 1952.

In the inter-war period, the number of small shops or factories used also for residence increased rapidly, but most owners were not clearly conscious of the distinction between business and residence. Still, that part of joint-use housing used for business can be estimated for the earlier period by adjusting the ratio it bears to total residence. This ratio is supposed to have a definite relationship to the growth of tertiary industry, but the correlation for this relationship is rough and weak, so the results obtained should be considered as merely suggestive.

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[5] The distribution of $\frac{N_i}{P_i}$ using the population in stock term shows that the ratio for large cities is not necessarily higher, but that it differs according to stages of development in each city. In the bench mark year of 1935, the arithmatic average of $\frac{N_i}{P_i}$ for all cities is 0.122 *tsubo* (unit of floor space equal to 3.3058 square metres), while that for big cities is 0.120. Therefore, it is safe to use the data from large cities as the sample.

[6] According to the Institute of Building, r is estimated 2% in the wooden building.

Discrepancies among three kinds of statistics obtained at different stages of construction—building permits, housing starts, and housing completions—, present the problem of distinguishing their economic meaning. Urban Districts Building Law Statistics were obtained on housing completions basis while the Ministry of Commerce & Industry Statistics were complied on a housing starts basis. In the post-war period, also, the same system of statistics has been adopted. The former, as ex-post statistics, is suitable for tracing long term capital formation in residential housing. On the other hand, building permits or housing starts data is on an ex-ante basis and is therefore helpful in predicting business fluctuations in the short run. The former is broader in its coverage but is apt to accompany the understatement. The latter also is accompanied with undervaluation because of incomplete reporting.[7]

The above is limited to problems of estimating net investment in housing. The estimation of gross investment is more difficult and troublesome.

IV. *Measurements*

Various data on the national economy since 1930 have been compiled by the Economic Planning Board using modern statistical methods. As a result,

Table 1 *Example of Measurement* (1930–1932)

Year	*Tsubo* of new constr. in sample (in thous. *tsubo*)	Sample pop. (in thous.)	*Tsubo* per person in sample (A/B)	Total urban pop. (in thous.)	Urban Res. constr. (C)×(D)
	(A)	(B)	(C)	(D)	(E)
1930	1,535	13,790	0.111	18,343	1,926
31	1,636	14,090	0.116	19,081	2,079
32	1,796	14,400	0.125	19,803	2,317

Year	Index of constr. cost (1933=100)	Urban cost of const. per *tsubo* (F)×68.4 yen	Adjustment for joint-use housing (in thous. *tsubo*)	Value of urban res. constr. (G)×(H)
	(F)	(G)	(H)	(I)
1930	96.2	65.8	1,637	107,714
31	96.1	65.7	1,768	116,158
32	96.0	65.7	1,969	129,363

Notes on Table 1

(1) Columns (A) and (B) are data collected under the Urban Districts Building Law.

(2) Because the area included in Tokyo was increased by annexation of neighboring towns, column (D) is adjusted.

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[7] According to an investigation by the Ministry of Construction, it is estimated that in terms of floor space, actual construction was about 1.6 times that reported during the period 1950–55. For the pre-war period, Drs. Kitazawa and Ito estimated that new and addition of building performed without was 10% of total floor space.

(3) The index of construction cost estimated by Dr. S. Tani is adopted here. He caluculated the index from 1900 to 1952. (Cf. *Study on Housing Management Expense by Shigeo Tani*, Report of the Building Research Institute, Dec., 1954)

(4) It is due to the comprehensive survey on total cost of construction in Japan 1933 which was investigated by Drs. Kitazawa and Ito. The unit cost of construction was estimated by weighting the average cost in large, middle size and small cities by the given total *tsubo*, using in 1933 as a bench mark year.

(5) That part of joint-use housing used for family dwelling purposes was estimated as being, 85 % of the figure for total residential housing. Of course, it is not constant over time, but must be adjusted for growth of tertiary industry, particularly the degree of subdivision of petty shops.

(6) Rural residential construction was estimated by means of the following formula

$$A_r=\frac{A_u\cdot\alpha\cdot P_r}{P_u}\cdots\cdots\cdots\cdots\cdots\cdots(6)$$

P_u............population in urban districts
P_r............population in rural districts
A_u............total *tsubo* for residential housing in urban districts
A_r............total *tsubo* for residential housing in rural districts

α is the ratio of *tsubo* per person in rural districts to that in urban districts. It is estimated to be 0.42 for the entire period, excluding 1945—48, which were abnormal years in rural areas and is applied to pre-war period. To summarize, the total value of investment in residential housing can be calculated from

$$H=A_u\cdot\beta\cdot C_u+A_u\cdot\partial\cdot C_r$$

β and ∂ are, respectively, the ratio of dwellings to households in urban and rural areas; C_u and C_r are respectively, the unit cost of construction in two areas. The Economic Planning Board, by combining the various series of construction costs in the pre-war period estimates $C_r/C_u=0.75$. However, care must be used in applying this ratio to the post-war period, because wages and the market structure for building materials have greatly changed. According to my estimate, $C_r/C_u=0.57$.

private residential construction has also been estimated as one component of capital formation. The method used is the same as that of the following table.

Applying the various columns in Table I to equation (3), column (C) corresponds to $\frac{N_{is}}{P_{is}}$, colum (D) to P_{iu} and column (G) to m_i. The question is whether to use $\frac{N_{is}}{\varDelta P_{is}}\cdot\varDelta P_{iu}$ or $\frac{N_{is}}{P_{is}}\cdot P_{iu}$ in expanding the sample to obtain the total. The Economic Planining Board adopts the latter, which is based on the assumption that new investment in housing is a function of total population. Furthermore, it is assumed that the following relationship exists between new investment in housing (N), increment of population ($\varDelta P$), total population (P) and the total number of houses (D),

$$N=a(\varDelta P)=b(P)=c(D)$$

Although the relationship itself must be proven, it is acceptable for the long run on the assumption of a constant rate of population increase and that of dwelling persons per house.

Using almost the same method, my estimation is compared with that of the Economic Planning Board in the following table (Table 2).

These two series are at different levels, but, with exceptions, movements are in the same direction.

The important question is how to extend the estimate for residential investment to the early Meiji era, when capitalism in Japan saw its beginning. Equations (1) and (2) should be used, but such an estimate is not attempted for gross investment. Data are availbale,

Period		Materials
I	1880–1886	Building land statistics by prefecture
II	1887–1908	Tokyo Prefecture statistics
III	1909–1926	Statistics of the six largest cities

However, these data are not consistent. In other words, the samples for II and III are different. In addition, I differ from the others in methods of measurement.

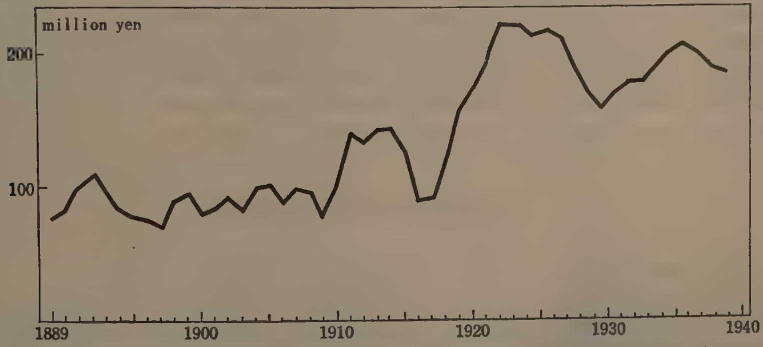
The difficulty in period II lies in the fact that two of the sample cities, Tokyo and Yokohama, suffered great damage in 1923 earthquake. Also, an adjustment must be made in applying S_t—S_{t-1} in the sample to all urban areas. In period II, Tokyo Prefecture is treated by dividing it into urban and rural areas, the latter being further divided into rising and stationary section. The pattern of $\frac{N_i}{P_i}$ in each section is examined to determine what linking is possible or suitable between periods II and III. In period I, the investment in residential land ΔL in Tokyo Prefecture is used instead of ΔP. To use ΔL, the relationship between ΔL and ΔP should be examined in a period when both series are available. Finally, the nature of the data and method of measurement are inconsistent. Therefore, three series are overlapped for five year intervals then linked in the order III, II and I according to reliability. This method of linking contains some error, but the rough movement of building investment in the long run can be seen.

Table 2 *Measurements of Residential Construction*, 1930–40 (unit: million yen)

	E. P. B. (1)	Author (2)
1927		212
28		221
29		244
30	159	173
31	155	185
32	170	203
33	203	216
34	213	214
35	228	246
36	250	268
37	363	323
38	270	262
39	330	354
40	458	431

Source: (1) The E.P.B., *The Japanese Economy and National Income*, 1954

Chart 1 *Movements of Net Capital Formation* (Five years' moving average, 1933 constant prices)



First, the results will be treated from the standpoint of economic growth.

From the chart, it can be seen that residential construction in Japan, rose too higher levels during and after World War I. The upward surge appearing in the decade 1910–20 is caused by the movement of population from rural to urban areas occasioned by the War, as already indicated. The subsequent surge is mainly due to reconstruction after the 1923 earthquake. Computing the annual rate of growth of residential construction, it is 1.4% for the thirty years before the end of World War I, and 1.7% for the following twenty years ending in 1940. As the average rate of growth in population is 1.2% over the entire period, it can be said that growth in residential construction was almost cancelled by increase in population.

Table III shows the ratio of housing investment to national income in current prices for five year intervals.

Table 3 *Ratio of Residential Construction to National Income in Current Prices (five year average)*

Period	Residental construction (million yen)	Ratio
1889—1892	26	3.2%
1893—1897	26	2.1
1898—1902	35	1.7
1903—1907	46	1.8
1908—1912	55	1.6
1913—1917	72	1.6
1918—1922	247	2.2
1923—1927	306	2.4
1928—1932	205	1.4
1933—1937	253	1.3
1938—1940	349	1.2

In the above table, also, the entire period can be divided into two by World War I. The ratio in each shows a tendency to decrease at the rate of about one to three percent. This is somewhat lower than expected. According to accepted opinion, the annual rate of economic growth in Japan since the Meiji Restoration was maintained at the level of 3.5 to 4% as a result of high rates of savings and capital formation. The main component of capital formation is producers' durable goods, including productive construction activities, but not residential construction. In view of the low standard of Japanese housing in the past many years, it seems that the ratio of residential construction to total capital formation was too low. However, this released savings for investment in producers' durable goods and productive construction. In other words, a low level of investment in residential construction might be one of the factors contributing to the promotion of economic growth in Japan, though in a passive sense.

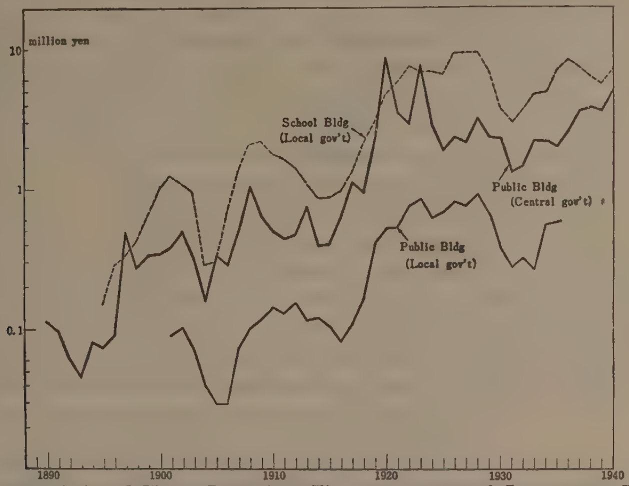
V. *Some Future Problems for Study*

(1) Building cycle

It is difficult to clearly indicate a building cycle in Japan by means of the foregoing methods. In general, however, a residential construction cycle of 6 to 10 years can be shown. As building cycles in Western Europe and the U.S.A.

are 17 or 18 years, the Japanese building cycle is only one-third to one-half as long. Also, the amplitude of cycle is no as great. This results from two general characteristics of housing investment in Japan. First, it is demand-determined as a result of the steady increase in population; and, second, Japanese investors in housing are small and weak.

Chart 2 *Building Construction in Government Sector* (current prices)



Source: *Koichi Emi and Henry Rosovsky*, "The measurement of Government Construction in Japan, 1868–1940," *Economic Review* (in Japanese) Hitotsubashi University Economic Research Institute Vol. 9, No. 1, 1958.

Building cycles appear in the government sector are shown in Chart 2. Each series shows the same length of cycle of about 6 to 10 years, with coinciding peaks and troughs. Because most school construction is primary schools, movements of this series indicate an increase in the number of new pupils entering primary school. Thus, it is related to the demand for houses accompanying the increase in population. Peaks and troughs appearing in school building and private residential construction are compared in Table 4.

Time-lags occure in the cycles of the two series, and troughs and peaks are often reversed. That the school building cycle moves together with the cycles of other two series of government building indicates a compensating rela-

Table 4 *Troughs and Peaks in Building Cycles*

	Public School Construction	Private Residential Construction
T	1886	1888
P	1888	1892
T	1890	1895
P	1901	1900
T	1904	1902
P	1909	1906
T	1915	1910
P	—	1913
T	—	1917
P	1922	1920
T	1925	1927
P	1927	1932
T	1931	1936
P	1936	—

tionship between government and private investment. Although it is possible to show the existence of building cycles in Japan, further study of this problem is needed.

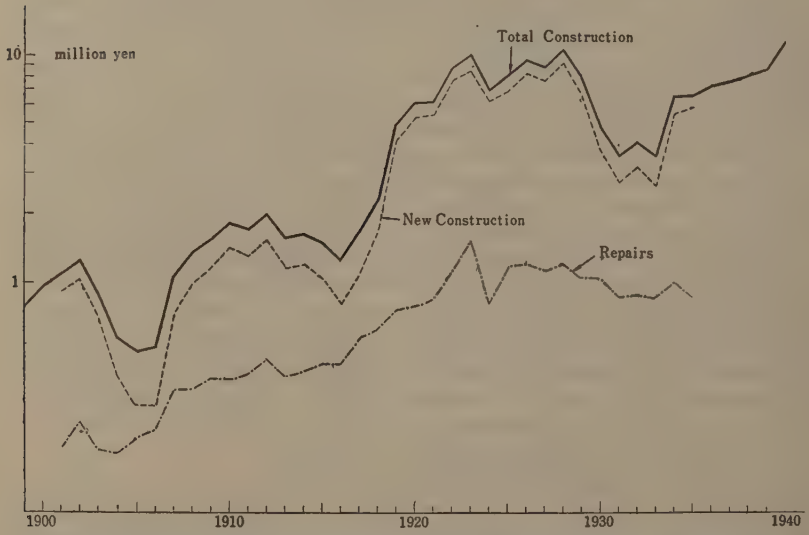
(2) New and repairs

Thus far, gross capital formation in residential construction, including repairs, has not been fully considered. This point will be briefly considered here. Table 5 shows the ratio of repairs to total investment. The percentage fluctuates for each five years' period except 1921–25, which includes the 1923 earthquake.[8] In general, new construction expands in boom period while repairs rise relatively in depression. This relationship is shown in Chart 3. If this is true, it can be said that fluctuations in repairs tend to offset cycles in new

Table 5 *Ratio of Repairs to Total Investment in Construction by the Central Government*

Period	Ratio of Repairs to total construction
1890—1895	28.34
1896—1900	17.62
1900—1905	23.66
1906—1910	16.11
1911—1915	19.64
1916—1920	9.12
1921—1925	9.37
1926—1930	15.76
1931—1935	18.99
1936—1940	15.55

Chart 3 *New Construction and Repairs by Prefectural Governments*



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[8] It should be noted that the secular decline in the ratio of net to gross investment observed in the United States does not appear in this table (See Grebler, Blank and Winnick, *Capital Formation in Private Residential Real Eatate*, 1956, National Bureau of Economic Research, p. 10).

construction. This is particularly important in the analysis of the relationship between growth and net in capital formation.

(3) Housing investment and urban population

In saying that new investment in housing is a function of increase in population, it should be pointed out that this is due to mainly to the flow of population from rural to urban areas with increasing industrialization of the Japanese economy. Therefore, the function for housing investment is more closely related to the net increase in urban population than to increase in total population. Accordingly, the equation for estimating housing investment, should be modified.

(4) Residential housing investment and cost of housing in the Family Budget Survey

Although investment in housing is only a small proportion of national income, one to three per cent, the cost of housing in the Family Budget Survey is a rather large proportion of family expenditure. According to the Family Budget Survey for 1926–1927, the cost of housing for workers living in Tokyo amounted to 16% of total family expenditures. 88.6% of the sample families lived in rented houses, so rent comprised the greater part of housing cost. It might be concluded that high profits to landlords who must bear the cost of repairs and high depreciation costs resulting from the short life of wooden houses.

In conclusion, investment for residential construction in Japan was very conservative during the pre-war period. This corresponds to the low standard of living in Japan. Since the Meiji Restoration, net investment in housing has been low, its average annual growth rate being 1.5%. This figure would be slightly larger if investment in housing were measured in gross terms. However even in gross terms, repairs to existing housing have not fully counted in Japan.

In only two periods were houses which existed in the early Meiji era replaced on a large scale: one was the period following the 1923 earthquake, the other was the past World War II period. Excluding these two abnormal periods, it can be said that the direct cause of replacement of buildings was natural disasters occurring almost every year. In other words, new investment in construction is the result of the pressure from of increasing population; and reinvestment is mainly due to natural disasters. Here the one character of the Japanese economy appears. Further study is needed to clarify these problems.

In concluding this paper, I must heartily thank my friend, Henry Rosovsky, Assistant Professor at the University of California in Berkley, who worked with me when he was a visiting member of the staff of the Hotitsubashi University Economic Research Institute. Sections I, II, III and IV of this paper represent the results of works done jointly by Professor Rosovsky and the present author; the remaining part are what has been developed since then on that basis by the author and the responsibility rests entirely with him.

LABOR'S RELATIVE SHARE IN THE JAPANESE AGRICULTURE SINCE 1878*

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I. *Introduction*

This paper deals with the long-run changes in labor's relative share in the Japanese agriculture. We define the labor's relative share as the proportion of returns to labor to the total net income.

Since Meiji Restoration, we had two big institutional changes of the land tenure system in the Japanese agriculture. One was the land-tax revision in 1873 and the other was the land reform in 1946.

In 1868, Japan terminated her feudal era (Meiji Restoration), and has emerged as a modern nation. As a natural consequence, feudal elements in agriculture such as restrictions of cultivation and transaction of land, and other feudalistic fetters binding farmers to land were removed. But as to the land had been collected by landlords through somewhat irrational transactions such as in the form of forfeited pawn and the like, none of the ownership who transactions of the land were facilitated at the time of the land-tax revision (1873). Through the revision of land-tax, the landowners whether small independent producers or absentee landlords, were asked to pay the land-tax in cash (3 per cent of land value), but the tenant-farmers were not allowed to pay their rent to the landowners in cash. Tenants were demanded by landowners to pay land rents in kind, and the percentage of it to the total yield was as high as that of land-tax during the feudal age.

It is estimated that the land leased to farmers by landowners in 1883 was 37 per cent of the total cultivated area.[1] During the 1880–1900 period, land was rapidly concentrated in the hand of landowners and in 1903 about 50 per cent of the paddy field was estimated as the tenant land. This land tenure system had last untill 1945.

However, the land reform, which had commenced on October 1946 when the Owner-Farmer Establishment Special Measures Law was enacted, brought revolutional changes in the land tenure system. Under the law, the ownership of about 2 million *cho* (1 *cho* is 0.99 hectarl) of tenanted land was transfered to

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* The author is indebted to Professors Kazushi Ohkawa, Mataji Umemura and Mr. Shohei Kawakatsu for their helpful suggestions and criticisms. Any defects as remain in the paper are, of course, the responsibility of author himself.

[1] *No-Shomu Sho Tokei Hyo* (*Statistical Yearbook of the Ministry of Agriculture and Commerce*), 1886. This percentage is for 3 *fu* and 33 prefectures, so this excludes 9 prefectures.

tenant-farmers by July 1950, and the rent in kind was prohibited furthermore the rate of cash rent was controlled.

The changes of percentage of tenant land are listed in the attached table.

Years	Total			Paddy Field			Up-Land Field		
	Area	Own	Tenant	Area	Own	Tenant	Area	Own	Tenant
	1,000 *cho*	%	%	1,000 *cho*	%	%	1,000 *cho*	%	%
1903	5,266	55.5	44.5	2,832	50.7	49.3	2,434	61.2	38.8
1913	5,794	54.5	45.5	2,945	49.0	51.0	2,849	60.2	39.8
1923	6,039	53.5	46.5	3,067	48.3	51.7	2,972	58.8	41.2
1933	5,969	52.5	47.5	3,219	46.7	53.3	2,750	59.3	40.7
1942	5,759	53.8	46.2	3,158	46.6	53.4	2,601	62.5	37.5
1949	4,958	86.9	13.1	2,817	86.1	13.9	2,141	88.1	11.9

Sources: N. Kayo, *Nihon Nogyo Kiso Tokei* (*Basic Statistics for Agriculture in Japan*), 1958.

II. *The Assumptions*

Any results obtained naturally depend on the particular assumptions made for the purpose of estimation, therefore a careful description of the assumptions adopted in this study may be made in the following part of this section.

Although the net agricultural income has been estimated,[2] the estimates of the functional distribution of net agricultural income present a number of difficulties. Very large portion of all types of agricultural resources does not receive an appropriate market return nor has a price determined in market. As the result, a number of assumptions needs to be made in deriving desired estimates. Net agricultural income is the sum of net farmers' income, so it includes the adjustments for changes in value of inventories, wage paid and rent to absentee landowners, interests on farm debt.

There may be three different methods of estimation available, they are as described below.

Method A. The returns to land are estimated by blowing up the total net rent on rented land to include all the land. The returns to capital are calculated by multiplying the value of non-real estate inventories by an estimated rate of interest. The returns to labor are determined as the residual, being the difference between net agricultural income and the computed returns to land and capital.

Method B. The returns to land are determined by multiplying the annual average rate of interest on farm mortagages by the estimated value of farm land. The returns to capital and labor are determined as in the Method A.

Method C. In contrast to treating the returns to labor as a residual claimant, this method derives an independent estimate of labor returns. An assumption is made so that all family workers, including the operator, receive the same amount of wages. The income figure for hired workers is the total wage bill paid by farmers. When this imputed labor income figure is added to land income and capital income as calculated under the Method A and B, the total of the three shares never becomes exactly equal to the total agricultural income.

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[2] K. Ohkawa and Associates, *The Growth Rate of the Japanese Economy since 1878*, 1957, Part II, Chap. I.

After considering the availability and reliability of statistical data, we decided to apply the Method A, and furthermore we gave up the attempt in making a separate estimate of the returns to capital owing to the lack of data. Consequently, our estimates of returns to labor include the returns to capital. However, even if we could make a separate estimate of the returns to capital by putting a heroic assumption, it is expected that they are probably quite small fraction of the net agricultural income.[3]

III. *Measurement*

In this section, we explain our procedure used in the estimation of the returns to land for the years over 1878–1942. Since the statistics of arable land area, which is classified into the paddy and up-land fields, is available for the entire period under investigation, our main task here is to derive the separate estimates of land rent per unit of area both for paddy field and for up-land field. The procedure of estimation of the land rent adopted in this paper is as follows:

A. Land rent of the paddy field:

(1) The Kangyo Bank has published annually the statistics of paddy field rent in terms of rice per *tan* (10 *tan*=1 *cho*) since 1921.[4] We use this statistics without any modifications and estimate the value of rent by multiplying it by the price of rice received by farmer.

(2) For the period before 1921, the data are available for the years of 1885, 1887, 1890, 1899, 1908–12 and 1916–20.[5] We can estimate the paddy field rent for the other years where there are no data available by using them as the benchmarks. Since it was a prevailing habit that a paddy field rent actually paid by a tenant-farmer was adjusted in proportion to the yield in any year, it is reasonable to interpolate the rent not in terms of the absolute volume in rice paid but in

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[3] According to Professor Tatsuo Inoue's estimate, the returns to capital in agriculture for the period of 1933–42, on the basis of the "*Noka Keizai Chosa*" (*Economic Survey of Farm Household*), are about 2–4 per cent of the total farm income. See T. Inoue, "Nogyo Shotoku no Haibun" (The Allocation of Agricultural Income), cited in *Nogyo Sogo Kenkyu* (*Quarterly Journal of Agricultural Economy*), April 1949, pp. 82–97.

[4] Nihon Kangyo Bank, *Denpata Baibai Kakaku oyobi Kosakuryo Shirabe* (*Survey of Sales Prices of Farm Land and Land Rent*).

[5] 1885, 1908–12 and 1916–20: Ministry of Agriculture and Commerce, *Kosaku Kanko ni kansuru Chosa Shiryo* (*Survey of the Tenancy Habit*), 1921. 1887: Takeo Ono, *Meiji Zenki Tochi Seidoshi Ron* (*History of Land System in Early Meiji Era*), 1948, pp. 253–8. 1887 and 1890: Mankichi Saito, *Nihon Nogyo no Keizaiteki Hensen* (*Economic Aspects of Japanese Agriculture*), 1919, p. 151.

terms of the ratio of rent to the yield per *tan* (the rent rate) for the benchmark years. The rent rates thus obtained for the benchmark years are as follows:

1885	73.4%	1899	69.3%
1887	72.8	1910	57.7
1890	60.9	1918	55.2

We use these benchmark rent rates and interpolate the other years proportionately. The annual figures of volume of rent on paddy field in terms of rice are calculated by multiplying the rent rates thus far obtained into the rice yield per *tan* which is available in statistics since 1878, and we estimate the value of rent by multiplying the volume of rent into the wholesale price of rice because of the lack of data on the price of rice received by farmer.

B. Land rent of up-land field:

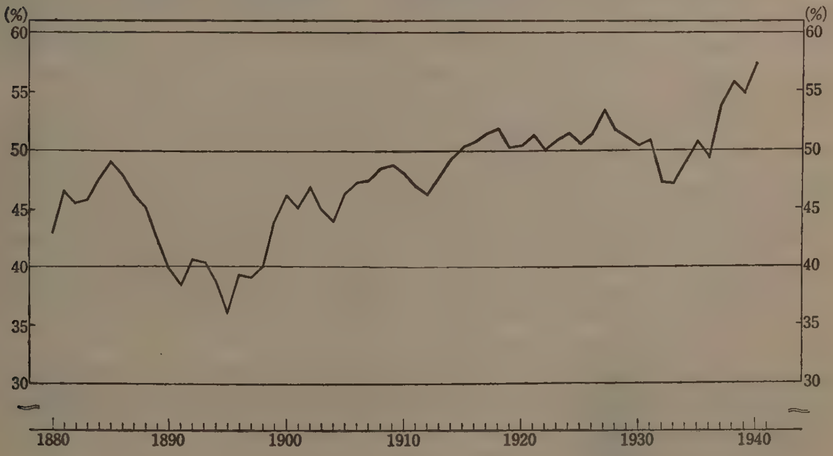
In contrast with the paddy field rent, the payment of up-land field rent has usually been made in cash. For the period before 1921, the data are available for the years of 1890, 1899, 1908–12 and 1916–20. We interpolate them for the other years by using the price index of rice. For the period since 1921, we directly used the data of the up-land rent in cash compiled by the Kangyo Bank.

Then we can estimate the total land rent of paddy field and up-land field, by multiplying the rents of paddy and up-land fields into the corresponding total cultivated areas respectively and by adding them up we can get the annual returns to land.

Now, the returns to labor were determined as the residual according to our assumption, that is to say the returns to labor being the difference between the net agricultural income and the returns to land.

The annual figures, thus obtained, are shown in the Annex Table. Figure 1 shows the results in five years moving average.

Figure 1 *Labor's Relative Share*, 1878–1942 (5 years moving average)



IV. *An Analysis of Long-run Change*

From Figure 1, we can conclude that the figures of labor's relative share fluctuate within a range of 40–60 per cent. The movement of labor's relative share during 19th century appears somewhat out of the following trend and we feel this a questionable. It may have been the result of faults in our estimation, and requires further careful investigation of basic data and of our procedures. Since the turn of the century, Figure 1 clearly suggests us steady long-run rising trend in labor's relative share which is accompanied by the minor cyclical variations from the trend.

Among the institutional, social and economic factors, which are supposed to affect the long-run changes of labor's relative share in agriculture, some strategic factors are selected and arranged in Figure 2.

They are (i) yield per unit of area, (ii) rent rate, (iii) net income ratio, and (iv) man-land ratio.

(i) yield per unit of area

The yield of rice, which is the most important crop in the Japanese agriculture, shows a rapid increase up to the end of the World War I and then slacken its speed in increase during the inter-war period. In 1920s, it shows even a slight decrease.

(ii) rent rate

The rent for the paddy field in kind had increased up to the beginning of the World War I and then declined considerably during the 1920s and rised again with the general recovery of economy in the 1930s.

By the comparison of these two series i.e. yield and rent, we may conclude that the rent rate per unit of area is apt to lag behind the productivity growth when increase of yield per unit of area is sufficiently rapid. The rise of labor's relative share during the period of 1900–20 may partly be due to this lag.

(iii) net income ratio

The net income ratio, which is defined as the ratio of net income to gross value of production, remains almost constant in the 19th century and turns down gradually since the beginning of the 20th century.[6] Since the long-run changes of relative price are quite minor throughout the entire period,[7] it can be said that the fall of net income ratio is mainly due to the shifts in the composition of products replacing crop by the products whose net income ratio is relatively low such as that of sericulture, livestock and dairy production, and horticulture. The produc-

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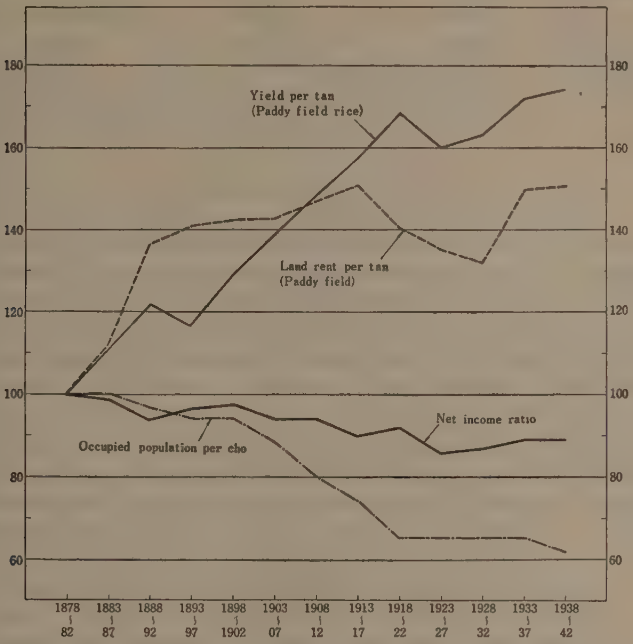
[6] K. Ohkawa and Associates, *ibid.*, Part II, Chap. 1.

[7] The long-run changes of relative price in Japan is almost constant. See T. Noda, "No-Ko kanno Koekijoken to Nogyo no Shotokuritsu" (Terms of Trade between Agriculture and Industry and Agricultural Income Ratio), cited in *Nihon no Keizai to Nogyo—Seicho Bunseki* (*Japanese Economy and Agriculture—Analysis of Growth*), 1956, edited by S. Tobata & K. Ohkawa, pp. 175–92.

Figure 2 *Changes of Yield, Land Rent, Income Ratio and Man-Land Ratio*

(1878~82=100)



tion of agricultural products other than rice increased from 100 for the period of 1913–17 to 132 for the period of 1933–37, while the production of rice increased only by 15 per cent during the same period.

(iv) man-land ratio

The man-land ratio within agricultural sector gradually falls during the 19th century, and decreases rapidly during the period of 1900–20, and remains almost constant since 1920. Since 1900 the secondary industries developed rapidly and the demand for labor in the industries increased very much. Consequently the migration of farm population to urban districts was accentuated. This is the main cause for the observed decrease of man-land ratio in agricultural sector.

The higher level of labor's relative share after 1935 is mainly due to the rise in the income ratio, which is caused by the favourable change in relative price to farmer, and the decrease of population pressure in the rural districts, this is in turn caused by a large scale military mobilization of man power and a revival of migration of civilian population from rural to urban districts. Furthermore, it should not be overlooked that the Farm Land Adjustment Act in 1941 and the Land Rent Control Act in 1942 might have some effects on the rise of labor's relative share in this period, because these Acts had for two objects, one was establish of tenant farmer's right and the other was stem a rising tendency of land rent under control.

We will compare the agricultural labor income per gainfully occupied population with the annual earnings of a manufacturing worker in Table 1. Although the available estimate of annual earnings of urban workers is unreliable in its absolute value, but the changes of it over time may seem realistic, therefore it may be reasonable to deal only with the changes of relative income in the two sectors.

The figures obtained in Column 3 Table 1 seems to show a downward trend, if not clear. Since the underlying estimates are not enough satisfactory to enable us to analize its long-run trend, we would like to leave a final judgement to future elavorated research. However, as for the cyclical change of relative labor earnings, it is clear that the relative income as defined in Table 1 changes to the same direction as the labor's relative share in agriculture. This positive correlation can be explained by the changes of labor migration between two sectors.[8] During the period of depression, some of laid off workers in manufacturing industries are obliged to come back to the rural districts where their relatives live, if not, at least the persons who are supposed to move out of the rural to urban districts seeking their jobs under normal situation of labor market, can not do so and are forced to stay in rural districts. These persons are apt to depress the agricultural labor income relative to the earnings of urban industrial worker and to the farm land rent in agriculture through the increasing competition in the agricultural factor market. Since it is observed that the labor's relative share in manufacturing industries decreases during the period of prosperity and increases during the depression owing to the relative rigidity of wage rate,[9] therefore it can be concluded that the labor's relative share in these two sectors move in opposite directions.

Table 1 *Comparison of Agricultural Labor Income and Manufacturing Wage*

Periods	Agricultural Labor Income per Occupied Population (a)	Annual Wage & Salaries per Head (b)	a/b
	Yen	Yen	%
1878～82	11	—	—
1883～87	9	—	—
1888～92	9	—	—
1893～97	11	—	—
1898～1902	23	—	—
1903～07	29	86	34
1908～12	37	117	32
1913～17	48	139	35

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[8] This phenomenon appears in the rate of employment increase at manufacturing industries. See M. Umemura, "Labor's Relative Share in the Japanese Manufacturing Industry since 1900", *The Annals of the Hitotsubashi University*, Vol. VIII, No. 2, 1958, Table 2.

[9] M. Umemura, *ibid.*, Table 1.

1918~22	115	381	30
1923~27	106	457	23
1928~32	78	406	19
1933~37	94	398	24
1938~42	192	626	31

Sources: (a), K. Ohkawa and Associates, *ibid.*
(b), M. Umemura, *ibid.*

V. *Labor's Relative Share in the Post-war Period*

Now we turn to a short discussion on the labor's relative share in the period of post World War 2. As a result of land reform mentioned in Section I, the tenanted land decreased to a quite small fraction of the total arable land and the land rent has been controlled by the Government. Therefore, we can not adopt the Method A, which is practical under the situation in the pre land reform period. And we are obliged to adopt the Method C for the period of 1952–55.

The figures in the data used are the averages of all sample farm households in the "Economic Survey of Farm Household" for each year under consideration. The labor's relative share is estimated by dividing the annual farm wage bill, which includes both paid wage and imputed one for family workers, by the net agricultural income.

The result obtained are as follows:

1952	58.5%	1954	65.2%
1953	63.8%	1955	56.3%

As for the level of labor's relative share, we can not find any significant difference between the pre-war and the post-war figures. But it is dangerous that we compare directly with both figures because of the difference in the method of estimation.

VI. *Inter-country Comparison*

Here we will attempt the comparison of the labor's relative share in Japan, U.S.A., United Kingdom and Canada (See Table 2).[10] Labor's relative share in Japan is lower than the other countries, and the difference may be due to the differences of the population pressure and of the growth rate of productivity in agriculture among the countries.

It is observed that labor's relative share in Japan shows minor cyclical variations, while the share in U. S. A. increased year after year. Since the increase of rent shows a general tendency to lag behind the steady increase of productivity, it is expected that the labor's relative share will raise up gradually. In the case of the U. S. A. and U. K. agriculture, this law was fully valid for the whole period, while in Japan it was only valid throughout in the earlier four decades and these effects became to weakness after 1920.

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[10] U.S.A.: D. G. Johnson, "Allocation of Agricultural Income," *Journal of Farm Economics*, Vol. XXX, No. 4, 1948, pp. 724–49. U.K. & Canada: J. R. Bellerby, *Agriculture and Industry Relative Income*, 1956, Table 1 and 7.

Table 2 *Inter-country Comparison of Labor's Relative Share in Agriculture* (%)

Periods	U. S. A.	U. K.	Canada	Japan
	D. G. Johnson	J. R. Bellerby		Our
1867 ~ 78		62.8		——
1878 ~ 82		59.4		44.7
1883 ~ 87		61.1		49.5
1888 ~ 92		64.6		40.3
1893 ~ 97		65.5		36.0
1898 ~ 1902		69.5		46.4
1903 ~ 07		67.4		46.6
1908 ~ 12		68.7		48.0
1913 ~ 17	55.0	——		50.1
1918 ~ 22	58.3	——		50.7
1923 ~ 27	59.5	68.4	71.9	50.8
1928 ~ 32	61.3	71.2	59.7	51.7
1933 ~ 37	62.7	78.2	65.1	51.0
1938 ~ 42	64.9	——	81.8	57.9

Annex Table. *Labor's Relative Share,* 1878–1942

	Agricultural Income	Returns to Land	Returns to Labor	Labor's Relative Share	5 years Moving Average
	Million Yen			%	
1878	218	153	65	29.8	—
79	349	186	163	46.7	—
1880	473	248	225	47.6	42.8
81	462	253	209	45.2	46.5
82	376	208	168	44.7	45.4
83	289	150	139	48.1	45.7
84	216	127	89	41.2	47.5
85	307	156	151	49.2	49.0
86	321	147	174	54.2	47.8
87	304	145	159	52.3	46.1
88	254	147	107	42.1	44.9
89	287	193	94	32.8	42.2
1890	510	291	219	42.9	39.8
91	411	242	169	41.1	38.4
92	424	254	170	40.1	40.7
93	415	269	146	35.2	40.6
94	563	315	248	44.0	38.7
95	550	315	235	42.7	36.1
96	509	349	160	31.4	39.1
97	619	451	168	27.1	39.1
98	1,017	503	514	50.5	40.0
99	676	380	296	43.8	43.8
1900	796	419	377	47.4	46.0
01	861	428	433	50.3	45.1
02	730	454	276	37.8	46.7
03	976	526	450	46.1	44.8
04	1,031	497	534	51.8	43.8
05	791	491	300	37.9	46.1
06	1,030	563	467	45.3	47.1
07	1,249	633	616	49.3	47.4
08	1,243	605	638	51.3	48.4
09	1,079	506	573	53.1	48.7
1910	919	524	395	43.0	48.0
11	1,298	692	606	46.7	46.9
12	1,571	848	723	46.0	46.2
13	1,627	884	743	45.7	47.6

Annex Table. (*Continued*) *Labor's Relative Share,* 1878-1942

	Agricultural Income	Returns to Land	Returns to Labor	Labor's Relative Share	5 years Moving Average
	Million Yen			%	
14	1,307	656	651	49.8	49.2
15	1,070	535	535	50.0	50.2
16	1,304	595	709	54.4	50.7
17	1,802	880	922	51.2	51.4
18	2,829	1,466	1,363	48.2	51.8
19	4,460	2,082	2,378	53.3	50.2
1920	3,439	1,648	1,791	52.1	50.4
21	2,819	1,513	1,306	46.3	51.2
22	2,478	1,186	1,292	52.1	50.0
23	2,686	1,290	1,396	52.0	50.8
24	3,042	1,591	1,451	47.7	51.4
25	3,469	1,531	1,938	55.9	50.5
26	2,904	1,474	1,430	49.2	51.3
27	2,608	1,365	1,243	47.7	53.3
28	2,639	1,167	1,472	55.8	51.7
29	2,767	1,162	1,605	58.0	51.0
1930	1,837	959	878	47.8	50.4
31	1,462	795	667	45.6	50.8
32	1,836	1,012	824	44.9	47.2
33	2,292	972	1,320	57.6	47.1
34	2,026	1,210	816	40.3	48.8
35	2,429	1,281	1,148	47.3	50.5
36	2,772	1,284	1,488	53.7	49.5
37	3,175	1,470	1,705	53.7	53.8
38	3,313	1,571	1,742	52.6	55.8
39	4,968	1,904	3,064	61.7	55.1
1940	4,800	2,061	2,739	57.1	57.2
41	4,083	2,026	2,057	50.4	—
42	5,224	1,872	3,352	64.2	—

FOREIGN EXCHANGE RESERVES AS A BUFFER IN JAPANESE COUNTERCYCLICAL POLICY

By AKIRA KOIZUMI

Professor of Money and Banking

I. *Prerequisite for countercyclical policy in Japan*

In recent times, countercyclical policy through various monetary and fiscal measures has been developed, especially in the United States. However, in Japan, the amount of foreign exchange reserves is the strategic factor which determines the limit of proper countercyclical policy.

The Economic Planning Board of the Japanese Government describes the requirements for balanced economic development, as follows:

"An optimum expansion is a long-range proposition. The actual economic trends will fluctuate above or below the optimum expansion rate according to the prevailing circumstances. Japanese economic conditions are subject to change largely with world market fluctuations. It is desirable that the shocks of change be absorbed and changes in economic conditions in Japan be kept in minimum degree with a view to a stable, permanent expansion on a basis of an optimum expansion rate. For this purpose the national treasury and the money market had better be equipped with a device to adjust the rate of economic expansion. In a country like Japan where economic situations are liable to effect the nation's international balance of revenue and payment, there should be a reserve holding of foreign exchange as a prerequisite for the policy of insuring business prosperity."[1]

This seems to suggest a foreign exchange reserves buffer policy. Yonosuke Goto, head of the Economic Planning Board Reseach Department at that time, gave the following personal explanation of this policy.[2] In case exports are expanding as the result of a boom in world markets, foreign exchange reserves should be accumulated; and in case exports are diminishing as a result of depression in world markets, foreign exchange reserves should be used to maintain imports. To accumulate foreign exchange reserves during prosperity, it is necessary to restrict domestic demand and imports, in spite of the increase in exports. In the other hand, in the case of depression, domestic demand should be expanded through proper fiscal and monetary policy to counterbalance the decrease in exports. If this policy induces an increase in imports accumulated foreign exchange reserves should be used.

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[1] Economic Planning Board, *Economic Survey of Japan (1955–1956)*, Tokyo, 1956, (English edition.) p. 23

[2] Yonosuke Goto and Hisao Kanamori, "Buffer Policy of Foreign Exchange Reserves," *Studies in International Trade and Industry*, May, 1956, Tokyo (in Japanese).

The purpose of this policy is to make the sum of domestic and foreign demand grow at a constant rate notwithstanding fluctuations in the world market. The accumulation of foreign exchange reserves is to be used to realize a steady growth of the national income of Japan. However, there are three requirements for executing this policy: (1) accumulation of foreign exchange reserves, (2) monetary policy which can neutralize the effect of fluctuations in foreign exchange reserves upon the domestic money market and (3) fiscal policy which can diminish or expand effective domestic demand, as required. Although the buffer policy of foreign exchange reserves appears theoretically reasonable, there are many obstacles to be overcome. It is especially doubtful whether "the optimum expansion rate" mentioned above can be precisely determined, and whether foreign exchange reserves sufficient to tide over a depression can be accumulated. Study of the secular growth rate of the Japanese economy in the past has shown remarkable development recently,[3] but it is a different matter to determine the optimum expansion rate for the future. Countercyclical policy requires a careful diagnosis of the cyclical position of the economy at various points in time. The record of economic forecasting is rather poor. Simple criteria to determine the turning points of the business cycle have not been found. To the difficulty, or impossibility, of exact forecasting must be added the unavoidable delay in enforcing countercyclical measures.

Because of the great difficulties of forecasting and timing, cyclical fluctuations can not be eliminated, but they can be dampened. Thus, theoretical consideration of the buffer policy seems in order. Now, four cases of cyclical disequilibrium can be distinguished. In the first case, there is domestic deflation and an external surplus. The remedy for such a case is expansion, or reflation, and it is not necessary at accumulate foreign exchange reserves. In the second situation, however, there is internal inflation and an external surplus. Here, foreign exchange reserves should be accumulated, and it is necessary to reduce domestic demand, that is, follow a policy of disinflation. The third condition is one of inflationary pressure at home and an external deficit. The only remedy required is disinflation. In the fourth case, there is domestic deflation and an external deficit. Then, a domestic policy of reflation is required, and accumulated foreign exchange reserves should be used.

The above classification is suggested by Prof. Harrod's analysis[4] of fundamental disequilibria in a nation's international balance of payments and their remedies. However, because the buffer policy under consideration here concerns only cyclical disequilibrium, changes in the foreign exchange rate, and factor rewards are excluded as remedies. Also, the buffer policy assumes that cyclical disequilibrium would balance out over a complete cycle. Actually, the foreign exchange reserves accumulated might be insufficient to make this possible. However, the asistance of the International Monetary Fund could be expected in such an event.

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[3] Kazushi, Ohkawa, etc., *The Growth Rate of the Japanese Economy since 1878*, Tokyo, 1958 (English edition).

[4] R. F. Harrod, *International Economics*, London, Revised and Reset, 1957, pp. 140.

Experiences with a buffer policy in Japan are examined in this paper, retrospectively. Strictly speaking, 1914 to 1920 is not an appropriate period to examine the applicability of the buffer policy, especially because the rate of foreign exchange was fluctuating freely. After the collapse of the gold standard with the outbreak of World War I, the main monetary problem in Japan was how and when to return to the pre-war gold standard. However the policy was applied unintentionally, so it is discussed in section two. Japan returned to the gold standard at the pre-war exchange level in January 1930, but another departure from the gold standard was forced in December, 1931. Since then, some form of exchange control has always been in effect. A basic foreign exchange control law was enacted in 1933, and exchange control adjusted to a semi-war and war economy was practiced till 1945. During the occupation, the Foreign Exchange and Trade Control Law was enacted in December, 1949. Although it has been amended several times, the present system of control is based on this law. The Japanese Government makes foreign exchange allocations for all transactions on the basis of special exchange budgets prepared semiannually. The foreign exchange budget is an estimate by the Government of receipts and payments of foreign currency from visible and invisible transactions. On the basis of this budget an import program is determined and exchange set aside for varions commitments during the period, including remittances of profits and dividends on investments, interest on loans, and repatriation of foreign capital.

Accordingly, a system of licensing is in effect for all transactions, both domestic and foreign, which involve foreign exchange payments or receipts. All foreign exchange must be surrendered to the government and maintained in special accounts under government control. This is the Foreign Exchange Fund Account. The Minister of Finance administer this Account, but actual management and operation are delegated to the Bank of Japan, which acts as the agent of the Minister of Finance. In the case of an external surplus, yen payments from this Account to the domestic private sector exceed receipt and currency increases. This is similar to the effects of a gold inflow under the gold standard. In the case of an external deficit, yen receipts to this Account from the domestic private sector exceed payments and currency decreases, as with a goldout flow under the gold standard.

The official exchange rate for the yen has been ¥360 to one United States dollar since 1949. Sections three and four of this paper examine the applicability of a buffer policy to the Japanese economy during the period 1950–1958 under these institutional conditions.

II. *Experiences from 1914 to 1920*

It seems that the buffer policy of foreign exchange was executed uninterntionally during World War I. The unfavourable balance of payments which had prevailed in Japan's international trade to that time, changed to a favourable balance as a result of the outbreak of W.W.I. During the five years from 1914 to 1918, exports exceeded imports by 1,375 million yen, while the surplus from items other than visible trade amounted to 1,339 million yen. The total balance of payments surplus was, therefore, 2,714 million yen for the period. The payments surplus on items other than visible trade continued after the armistice into 1920. Thus, the payments surplus in the balance of payments totalled as much as 2,962 million yen from 1914 to 1920.

In 1914, the debts Japan owed to other countries were, in total, 1,900 million yen including national loans and loans raised by prefectural governments and private companies. On the other hand, the gold reserve held by the Bank of Japan was valued at 129 million yen, while the gold reserve kept abroad and overseas investments respectively amounted to 213 million and 460 million yen. Therefore, debts exceeded credits by 1,098 million yen. In 1920, Japan's total foreign debts were 1,600 million yen, while the gold reserve of the Bank of Japan, the gold reserve kept abroad and overseas investments were respectively 1,116, 1,062 and 2,200 million yen and credits exceeded debts by 2,778 miollion yen. Japan was, therefore, faced with grave difficulties in the field of international finance because of a large payments surplus accumulated over the relatively short period of 7 years.

This situation was further aggravated by the ban on exports of gold from Europe and America. Meanwhile, the Yokohama Specie Bank and other foreign exchange banks ran short of funds for trading and were given credits by the Bank of Japan, amounting to respectively 20, 120, 200 and 440 million yen in June of 1915, 1916, 1917 and 1918. On the other hand, they raised funds in the market, the amounts of which fluctuated from 100 to 250 million yen. The foreign exchange banks also had to bear the difference between the rate of interest at home and abroad. The decline in the value of the reserve foreign currency was also a heavy blow to them, the exchange rate per 100 yen rising from $10.59 in July, 1914., to $52.125 in December, 1918.

The great surplus of exports over imports brought inflation and the rise of commodity prices. Taking July, 1914, as the base, the index of wholesale prices was 99, 117, 164, 200 and 254, respectively, in July, 1915, 1916, 1917, 1918 and 1919. The note issues of the Bank of Japan were respectively 430, 601, 831, 1,144, and 1,555 million yen at the end of 1915, 1916, 1917, 1918, 1919.

With a view to checking the rise in commodity prices, control or ban of exports was proposed. However, the proposal was not approved by the authorities, who found in the export boom a golden opportunity for acquiring foreign exchange. From a foreign exchange reserves buffer policy standpoint, measures should have been adopted to check domestic demand in order to solve the difficulty which resulted from the accumulation of a large amount of foreign exchange at the exchange banks. This foreign exchange was purchased by the government from the Deposits Account partly as preparation for repayment of foreign loans, but it should also be interpreted as a policy for sterilization of gold. By 1918, foreign exchange amounting to some 14,000 million yen had been purchased by the government, and it became the governmental reserve kept abroad.

Table 1 *Specie Holding*

(million yen)

end of year	Possessor		Location		
	Government	The Bank of Japan	Total	At home	Abroad
1912	82	269	351	136	215
1913	91	285	376	130	246
1914	49	292	341	129	213
1915	153	363	516	137	379
1916	262	453	714	228	487
1917	386	719	1,105	461	643
1918	855	733	1,588	453	1,135
1919	1.051	994	2,045	702	1,343
1920	888	1,292	2,179	1,116	1,062
1921	791	1,289	2,080	1,225	855
1922	667	1,163	1,830	1,215	615
1923	526	1,127	1,653	1,208	445
1924	421	1,077	1,501	1,175	326

Source: The Bank of Japan, *Economic Statistics of Japan* (1925), Tokyo, 1925, pp. 1–2.

According to Mr. Eigo Fukai, then a staff member and later president of the Bank of Japan, "A gold inflow is welcomed by most countries, because the acquisition of gold is, in most cases, very difficult. The bank of issue keeps the gold thus acquired and use it to strengthen the basis of the currency. Even if the inflow of gold is not desired, it cannot be stopped, unless import or free minting of gold is prohibited. Currency inflation is also an unavoidable consequence of a gold inflow. If gold is bought by the bank of issue, the currency in circulation increases by the amount of the bank notes issued in exchange for the gold. If it is not purchased by the central bank, the gold will be minted and put in circulation, again bringing about currency inflation. When an inflow of gold causes inflation of the currency, measures are available which have the effect of contracting the circulation of currency. This is, however, beyond the control of the bank of issue. In fact, if inflation is to be avoided, the gold should not be kept at the bank of issue, but by the government. When a large amount of gold poured into Japan immediately after World War I, the government purchased the gold from the Bank of Japan and kept it under government control with the above-mentioned idea in mind. The Bank of Japan received bank notes or the equivalent amount from the Deposits Account. Both of these transactions naturally had the effect of checking currency issue and, thereby, its increase. On the other hand, the gold, which thus came into possession of the government, was deposited at the Bank of Japan as a separate deposit, the balance of which was made independent as special cash in the Government account. In this form, the gold lost the effect it previously had on the money supply. However, all the procedures concerned were now essentially the business of the Government, not of the Bank of Japan."[5]

Another measure adopted was the conversion of foreign loans into domestic obligations, which meant the redemption of foreign loans by means of raising loans in domestic markets, where interest rates were lower. This had the effect of contraction currency, but, in reality, loans of only 90 million yen were floated, because the Government at that time adhered to the so-called non-issuance policy and did not want to increase domestic obligations for any purpose. Measures other than the above were adopted but with slight effect, the problem being automatically solved by the armistice.

Recalling the situation at that time, Mr. Junnosuke Inoue, then president of the Bank of Japan and later Minister of Finance, made the following statement:

"For the past several decades, imports have exceeded exports. We have therefore cudgeled our brains with a view to encouraging exports and discouraging imports. Now, however, exports are exceeding imports and we are in a position to make money very easily. However, no thoroughgoing study is available concerning the measures to be taken at such a time. It is just like the perplexing situation in which a non-drinker is placed when he suddenly makes up his mind to go wet and tries to warm *sake*, but does not know how to go about it. The various difficulties ensuing from an excess of export are, therefore, mainly due to unfamiliarity with the related problems on the part of us, who are the very parties concerned."[6]

The foreign currency reserves obtained during these years were exhausted during the following depression period. The result, though unplanned, was therefore just the same as that under a buffer policy of foreign exchange reserves.

III. *Experiences from 1950 to 1953*

As a result of the outbreak of the Korean War in June, 1950, the economy of Japan suddenly jumped into a boom, after the depression due to the Dodge line. Owing to the increase of exports and procurement by the U.S. army, the foreign exchange reserves grew from 225 million dollars at the end of 1949 to 564 million dollars at the end of 1950. In spite of the large amount of excess receipts of the General and Special Accounts, which amounted to 232,200 million yen, payments of the Treasury Account, including the Foreign Exchange Fund Account, exceeded receipts by 41,900 million yen in fiscal 1950. Because the net payment over receipt from the Foreign Exchange Fund Account to the private sector amountad to 278,200 million yen. Increased demand and rising profits induced new investment in plant, and the Bank of Japan was forced to expand credit by 51,400 million yen and its note issue by 84,900 million yen during the period. Using June, 1950, as 100, the wholesale price index for December, 1950, and June, 1951, became respectively 123 and 152. In the supplementary budget for 1950 and the ordinary budget for 1951, respectively, 10,000 and 50,000 million yen were transfered to the Foreign Exchange Fund Account from the General Account. This was the so-called policy of inventory finance.

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[5] Eigo Fukai, *Regulation of Currency*, Tokyo, 1928 (in Japanese), p. 294–398.

[6] Junnosuke Inoue, *The Present International Finance Situation and Policy for its Improvement*, Tokyo, 1925 (in Japanese), p. 15.

Inventory finance was first introduced to Japan by Mr. Dodge in 1949. Ascribing the post war inflation to deficit budgets and the cheap money policy adopted for rehabilitation, Mr. Dodge attempted to stabilize the economy by having the Government firmly maintain a balanced budget and tight money policy. Funds necessary for covering increased prices of inventories by various public corporations and the Food Control Special Account, as well as funds required to increase the amount of foreign currency held in the Foreign Exchange Fund Account, were to be obtained neither by sale of government bonds nor by borrowing from the Bank of Japan, but by transfer from the General Account of the Treasury.

A favorable trade balance, such as that caused by the world-wide boom accompanying the Korean War, results in an increase of foreign currency held in the Foreign Exchange Fund Account, while a shortage of yen funds results from the excess of yen payments over yen receipts. In the latter case, if yen funds are supplied by sale of short-term government bonds or loans by the Bank of Japan, the situation is essentially the same as that which results from an increase in gold reserves under a gold standard system. If yen funds are supplied from the General Account by the inventory finance method, the ultimate source of such funds is none other than taxes and other governmental revenues. In other words, there is absorption of yen funds in the private sector, and the causal connection between increase in foreign currency reserves and domestic inflation no longer exists.

From 1949 to 1953, the sum of 1,540,000 million yen was transferred from the General Account to the Foreign Exchange Fund Account. However, the effect of this inventory finance was offset by other anti-inflation measures aimed at promoting imports and production. During the world-wide armament boom ensuing from the Korean War, no attempt was made to accumulate foreign currencies as suggested by the buffer policy. On the contrary, emergency procurement of essential imports was the major concern in view of difficulties of acquiring raw materials in competition with other countries and fears concerning the spread of hostilities. In September, 1950, a foreign exchange loan system was instituted by the Bank of Japan. Under this system, a large amount of money was advanced to traders by the Bank of Japan and other banks to facilitate imports. However, because of various occupation controls, arrangements for imports were delayed. In particular, strategic materials such as leather, fat and rubber could be imported only after a rise in their prices.

The world-wide armament boom came to an end when the procurement of war materials by the United States was dis-continued in March, 1951, and the so-called Malik proposal for the peaceful settlement of the Korean War was made in June of the same year. As a result, the situation which would have justified the emergency import program did not materialize. Following the establishment of peace in Korea, there was a need for loans to many enterprises suffering from increase in inventories and falling prices, and finding it difficult to export. In 1951, there was a balance of payments surplus of 340 million dollars, but commodity imports exceeded exports by 290 million dollars.

Table 2 *Gold and Foreign Exchange Holding*

U. S. $ million

End of Year	The Bank of Japan			Government						Authorized Foreign Exchange Banks
	Total	Gold	Foreign Exchange	Total	Gold	Foreign Exchange				Foreign Exchange
						Sub Total	U. S. Dollars	Pound Sterling	Open Account	
1949	—	—	—	225	4	222	166	44	11	—
1950	—	—	—	564	7	557	462	54	41	5
1951	—	—	—	924	10	914	583	211	120	2
1952	50	—	50	1051	16	1035	664	249	122	64
1953	51	—	51	844	18	826	679	78	69	122
1954	51	—	51	971	21	950	564	194	192	108
1955	514	—	514	824	23	801	334	223	245	132
1956	497	—	497	1010	23	987	629	91	267	139
1957	211	—	211	808	23	785	431	50	304	189

Source: The Bank of Japan, Statistics Department,
Economic Statistics of Japan (*1957*), Tokyo, 1958, p. 261.

The world-wide recession began to influence the Japanese economy in 1952. The policy which was adopted at the time was, in a certain sense, along lines suggested by the buffer policy. More specifically, attempts were made to stimulate domestic demand in order to provide markets for production, which continued to increase even after the end of the boom. Among other objectives of the policy were neutralization of the deflationary effects of decreased foreign demand; use of available foreign currency to modernize plant and equipment and thus reduce production costs in preparation for future international competition; sterngthening the basis of production by such means as the development of electric power and increased food production in order to save foreign currency in the future.

By November, 1951, when the foreign exchange loan system was partially revised, exports to the sterling area had begun to exceed imports from that area. In fact, the sterling funds in the Foreign Exchange Fund Account grew from 54 million dollars at the end of 1950 to 211 million dollars at the end of 1951. At that time, England was experiencing heavy losses of gold, and as a result devaluation of the pound was rumored. To encourage imports from the sterling area, the Japanese Government instituted foreign exchange extra loan system in February, 1952. But the balance of payment surplus 94 million dollars was recorded in fiscal 1952.

As a result of the Korean armistice in July, 1953, deflation was taking the place of inflation in many countries in the world. In Japan, however, production continued to increase. National income increased from 4,525,200 million in 1951 to 5,084,900 million yen in 1952, while it was as much as 5,747,700 million in 1953. This seems to have been due to the policy adopted to counterbalance the decline of exports by an increase of domestic demand through enlarged public investment. The purpose of this policy was, in a sense, well in accord with the buffer policy, but it was limited by the insufficiency of accumlated reserves. Meanwhile, the index of wholesale prices decreased during 1952, being 151.0 and 148.7, respectively, in June and December, but increased during 1953, to 152.9 and 158.8, respectively. A poor rice harvest due to typhoons and floods increased the food imports. Thus, receipts and payments in international balance in fiscal 1953 were, respectively, 2,161 and 2,474 million dolloars, payments exceeding receipts by 313 million dollars. Also the foreign currency reserves held by the government decreased to 844 million dollars at the end of 1953, from 1051 million dollars at the end 1952.

As is clear from the above, the policy of maintaining internal economic stability was affected by the decrease of foreign currency reserves. Government receipt from the private sector exceeded payments by 21,500 million yen in 1952, but on the contrary excess payments were 63,600 million yen in 1953. This was due to the fact that excess yen recepits by the Foreign Exchange Fund Account in 1953 totalled 129,800 million yen, reflecting the external deficit; while excess yen payments were 13,100 million yen in 1952.

Had a balanced budget policy been adopted at that time, the large amount of yen receipts by the Foreign Exchange Fund Account would have caused a lowering of prices and an increase of unemployment. Actually such a policy was not adopted. Loans by the Bank of Japan increased by 63,500 million yen in fiscal 1952, and by 126,400 million yen infiscal 1953. Also, Bank of Japan notes in circulation increased by 58,400 million yen in fiscal 1952 and by 18,600 million yen in fiscal 1953.

From around October, 1953, the Bank of Japan began to enforce a tight money policy. At first, there was a speculative rise in the prices of some commodities whose imports were reduced, but during the course of 1954, the economy was gradually penetrated by the effects of this deflationary measure.

Reflecting upon economic development in these years from the standpoint of the buffer policy, there is nothing in the policy itself which can be criticized. Nevertheless, if measures are to be taken to offset a decrease in foreign demand the problem of the timing of these measures is important.

IV. *Experiences from 1954 to 1958*

The tight money policy in effect since October, 1953, gradually reduced the liquidity of the corporate business sector and made investment inactive. In 1954, the greater part of the 139,000 million yen Treasury bills issue, which was purchased by the Bank of Japan, was directed, together with funds of the postal savings system, to loans to the private sector totalling 235,000 million yen. This helped relax money market conditions, while the increase in loans of financial institutions to the private sector was a comparatively low 370,700 million yen under the tight money policy. The ratio of the increase in government loans to the increase in financial institutions' loans during the year was considerably higher than that of the average year.

In 1955, backed by the upward trends of overseas business and the effects of tight money measures at home, exports began to increase and business activity showed a remarkable growth.

Corporate business investment continued at about the same level as the previous year and net borrowing was a comparatively low 468,000 million yen. It should be noted, however, that the increase in money held by business amounted to seven times that of the previous year. This shows that funds flowing into the private sector, owing mainly to a 73,500 million yen increase in exports, were not directed to investment in equipment or inventories. Thus, the 352,700 million yen increase in money supply and the 121,700 million yen increase in foreign exchange holdings raised liquidity, both internally and externally.

The Government deficit amounted to 55,200 million yen during 1955, reflecting an increase in the inventory of rice due to a good harvest. This deficit, and the yen deficit of the Foreign Exchange Fund Account were covered by the Bank of Japan's accommodation, the latter by sale of foreign exchange (166,500 million yen) and the former by sale of Treasury bills (68,200 million yen). Funds flowed from the Government to the private sector through purchases of foreign exchange during almost the entire year, and purchases of rice during the last quarter.

These Government payments increased liquidity in the private sector and eased the money market. Under these conditions, the Bank of Japan adopted a policy of absorbing excess liquidity of commercial banks by reducting its advances and discounts. However, the Bank found it impossible to continue this policy because the liquid funds of commercial banks became so ample that borrowing from the Bank was unnecessary. Thus, the tender of treasury bills and open market operations were next regarded as requisite to absorb excess liquidity. Towards the end of the year the Bank sold a large amount of Treasury bills to banks and other financial institutions. The Ministry of Finance, however, adhered to a low interest rate policy, so the Bank's selling operations were not effective enough. It can be said that the Bank of Japan acted in accordance with the principle of the above-mentioned buffer policy, but it did not have adequate weapons.

Together with the easing of money market conditions after the second half of 1955, commercial banks began to take a more positive attitude toward loans. As these banks could not find suitable securities for investment, they began to compete with one another in granting credit, which brought about a remarkable increase of 1,131,500 million yen in loans to corporate business. Corporate business had already rebuilt from its weakened liquidity position as a result of the inflow of founds due to the external surplus and deficit payments from the Treasury accounts. It now increased its investments in both equipment and inventories, supported by the changed attitude of banks toward loans and the prosperity of the world market. Net borrowing by corporate business recorded a remarkably large total of 1,017,500 million yen 2.3 times that of the previous year.

This brisk activity in the corporate business field increased personal income and brought, in turn, increased personal savings. In the Government sector, it led to a revenue surplus of 110,000 million yen through increased tax revenues. Meanwhile, the increase in money supply was greater than that for 1955, the increase in cash currency being especially remarkable, owing mainly to the expansion of personal income and expenditure for consumption.

In view of these upward trends in the economy the Government could have been expected to play a stabilizing role through increasing tax revenues from the private sector. However, it was unable to put sufficient pressure on the liquidity of the private sector and the money market for the following reasons. Firstly, in spite of the unfavorable balance of trade, yen payments by the Foreign Exchange Fund Account recorded an excess over receipts owing to the increase in foreign debt of corporate business. Secondly, the increase in Government loans was larger than that in postal savings and receipts of postal life insurance premium. Finally, the funds for these payments by the Government were covered by credit from the Bank of Japan.

Over-expansion of economic activities continued through 1956, and gave rise to deterioration of the balance of payments in the first half of 1957. The excess of imports over exports amounted to 210,200 million yen, and the reduction of foreign exchange holdings to 157,600 million yen. In the first half of the year the former was 239,500 million yen and latter 174,900 million yen, respectively. Finally, in order to meet the rapidly worsening balance of payments situation, a tight money policy was adopted in May. It was eventually effective in curbing the unduly large investment lying behind the balance of payments deficit. On the other hand, 125 million dollars were bought from the International Monetary Fund. For a short period after the adoption of stringent measures, however, investment in corporate business continued to increase as both equipment programs and purchases of raw materials previously contracted for were effected. Net corporate borrowing totalled 1,226,300 million yen for 195,720 per cent larger than that in 1956.

In the Government sector, the increase in tax revenues resulted in the remarkably large reveune surplus of 224,400 million yen. The greater part of this surplus flowed into the Bank of Japan through redemption of Treasury bills held by the Bank. Also, the Foreign Exchange Fund Account absorbed 216,200 million yen due to the external deficit. These measures made the liquidity position of corporate business stringent, leading to increased demands for credit on the part of business and making commercial banks more dependent upon the Bank of Japan for loans.

Meanwhile, the commercial bank attitude toward loans became very restrictive. This weakened the cash position of corporate business, where the increase in cash holdings was only a fifth of that in 1956. Also, in the household sector, the increase in cash holdings was only a third of that in 1956.[7]

The buffer policy was not successful in either the period 1950–1953 or the period 1954–1958. However, lack of success was due partly to insufficient recognition by the monetary authorities that a buffer policy was necessary. Also, its failure might be partly the result of the fact that it is difficult to distinguish cyclical disequilibrium from fundamental disequilibrium. Nonetheless, the necessity of a buffer policy seems to have been clearly revealed.

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[7] The Bank of Japan, *Monetary Development, 1954—1957, and Essential Features of Financial Structure of Japan* (*A Study on Money Flow in Japan*), Tokyo, Dec. 1958 (English edition), pp. 3–6.

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